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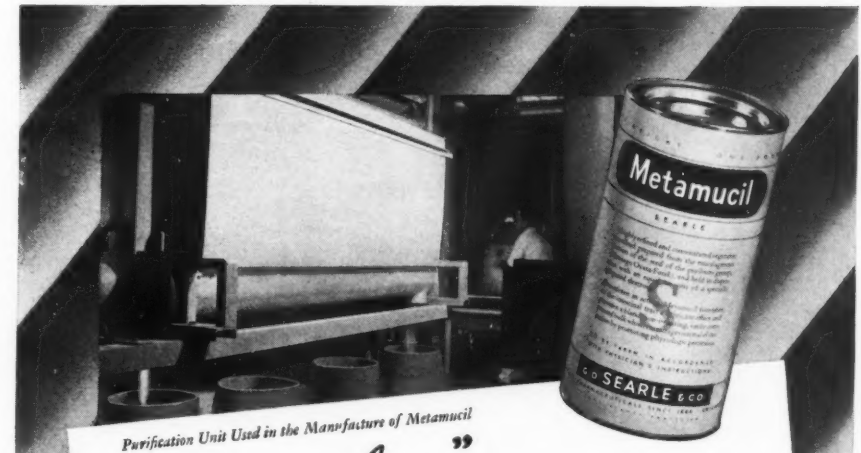

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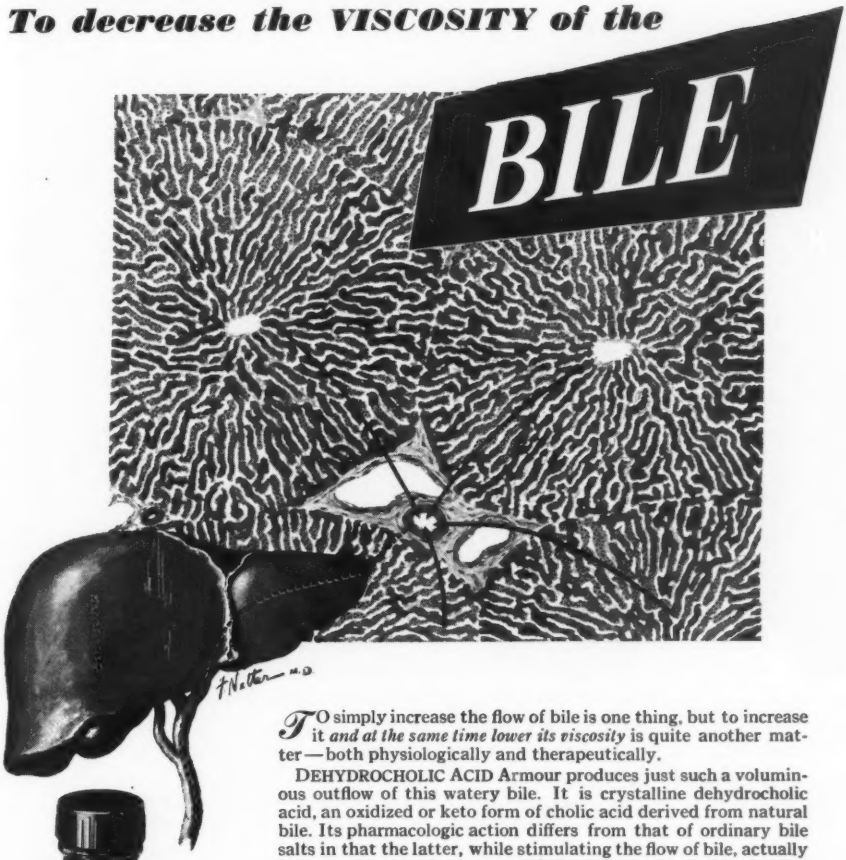

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[1] PICKRELL, K. L.: Bull. Johns Hopkins Hosp. 69:217 (Aug.) 1941.
[2] ADAMS, W. M., and CRAWFORD, J. K.: South. Surgeon 11:324 (May) 1942.

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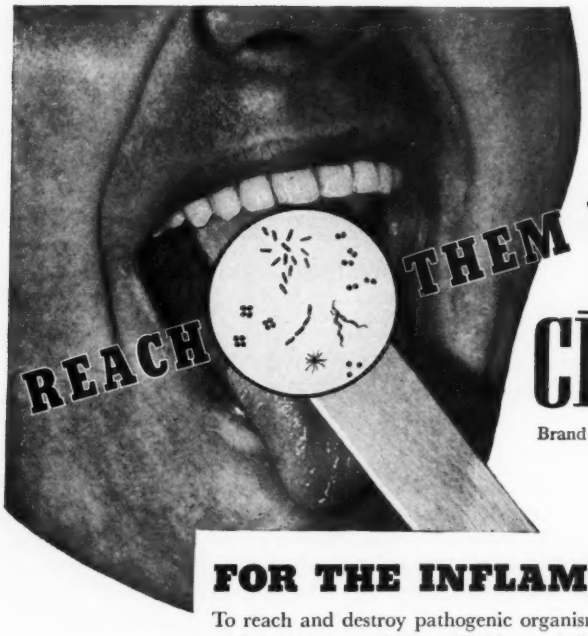

CĒPACOL

Brand of alkaline germicidal solution

FOR THE INFLAMED THROAT

To reach and destroy pathogenic organisms that breed in the mouth and throat, a germicide of highly specialized nature is required . . . it should have rapid germicidal action, high penetrating power, yet be non-injurious to delicate tissue.

Cēpacol, the new kind of solution for topical application as gargle or spray, more than fulfills these difficult requirements.

Rapid Germicidal Action—By standard F.D.A. tests, Cēpacol destroys pathogenic bacteria common to the mouth and throat *within 15 seconds after contact.*

Penetrating and Detergent—Unusually low surface tension permits penetration into otherwise inaccessible recesses of the mucosa. Because of its foaming detergency, Cēpacol washes away mucus that forms a breeding ground for bacteria.

Non-Irritating—In spite of its powerful germicidal action, Cēpacol is non-toxic and non-irritating . . . soothing to inflamed mucosa. It is not astringent, and does not interfere with healing.

Alkaline—Unlike most antiseptic solutions, the pH of Cēpacol is on the alkaline side . . . combats acidity in the oral cavity.

Pleasant Tasting—The pleasant, refreshing flavor of Cēpacol insures patient cooperation.

Cēpacol is available at prescription pharmacies in pints and gallons.

Trade Mark "Cēpacol" Reg. U. S. Pat. Off.

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THE WM. S. MERRELL COMPANY

Founded 1828 • Cincinnati, U. S. A.

Heap big Injun Manyfeather,
Apparently as tough as leather,
Is not so tough as it would seem—
Is not the man he might have been.
Manyfeather's Doctor Dunne
Says he's lacking in B_1.

RICH MAN, POOR MAN, MERCHANT, ***Chief,***
and others, too, may require additional Vitamin B_1 daily.

Wyeth's BEWON* ELIXIR*

"CLINICAL EVALUATION of the American dietary indicates that large groups of our population live on diets on the borderline of adequacy of Vitamin B_1."[1]

When the diet requires the addition of thiamin, Wyeth's Bewon Elixir provides a pleasant means of insuring an adequate supply of this important substance, without disturbing the normal dietary routine. It also serves as an excellent vehicle for many medicaments.

Wyeth's Bewon Elixir is a palatable elixir containing 500 International Units of Vitamin B_1 in each fluid ounce. It is available in pint and gallon bottles.

[1]Reimann, H. A.: Treatment in General Medicine, 1941 Progress Volume. Phila., F. A. Davis Co., 1941.

*Reg. U. S. Pat. Off.

JOHN WYETH & BROTHER, INC., PHILADELPHIA

Consider

HEMATINIC PLASTULES*

The value of including liver extract with iron in treating secondary anemias in young children as well as adults has been demonstrated.[1] In addition to the changed blood picture, patients' appetites improve, irritability disappears, activity and alertness increase, and there is a rapid gain in weight. In such cases Hematinic PLASTULES with Liver Concentrate are of therapeutic value. Each Plastule contains the equivalent of 52½ grains of fresh whole liver. The iron content is 2.5 grains of dried ferrous sulfate U.S.P.X. per Plastule. Suggested dosage—2 PLASTULES three times daily. Supplied in bottles of 50, 100 and 1000.

1. Maurer, S., Greengard, J., and Kluver, C.: "The Value of Liver Extract and Iron in the Anemia of Young Infants." J.A.M.A. 98:1069:1932.

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A SUPPLEMENTAL ALUMINUM THERAPY

Aluminum hydroxide gel is accepted therapy in the management of peptic ulcer. Its impressive record of effectiveness suggested the development of an alternate aluminum preparation to meet particular requirements in certain cases.

Phosphaljel,* Wyeth's Aluminum Phosphate Gel, was originated by Wyeth and was used experimentally in the first successful attempt to prevent postoperative jejunal ulcer in Mann-Williamson dogs. Some animals were allowed to develop Mann-Williamson ulcers and the effectiveness of Phosphaljel was further demonstrated when its administration was followed by prompt healing of these lesions in every case.[1]

In man, Phosphaljel was found to be most effective in peptic ulcer following gastrojejunostomy, a condition which appears to be analogous to the Mann-Williamson ulcer in dogs.[1]

Phosphaljel contains 4% aluminum phosphate and possesses antacid, astringent and demulcent properties analogous to those of aluminum hydroxide gel.

[1] *Fauley, G. B.; Freeman, S.; Ivy, A. C.; Atkinson, A. J., and Wigodsky, H. S.: Aluminum Phosphate in the Therapy of Peptic Ulcer, Arch. Int. Med. 67: 563-578 (March) 1941.*

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PHOSPHALJEL
"Wyeth's" ALUMINUM PHOSPHATE GEL
Phosphaljel is accepted for use in the treatment of peptic ulcer associated with a relative or absolute deficiency of pancreatic juice, diarrhea or a low phosphorus diet.
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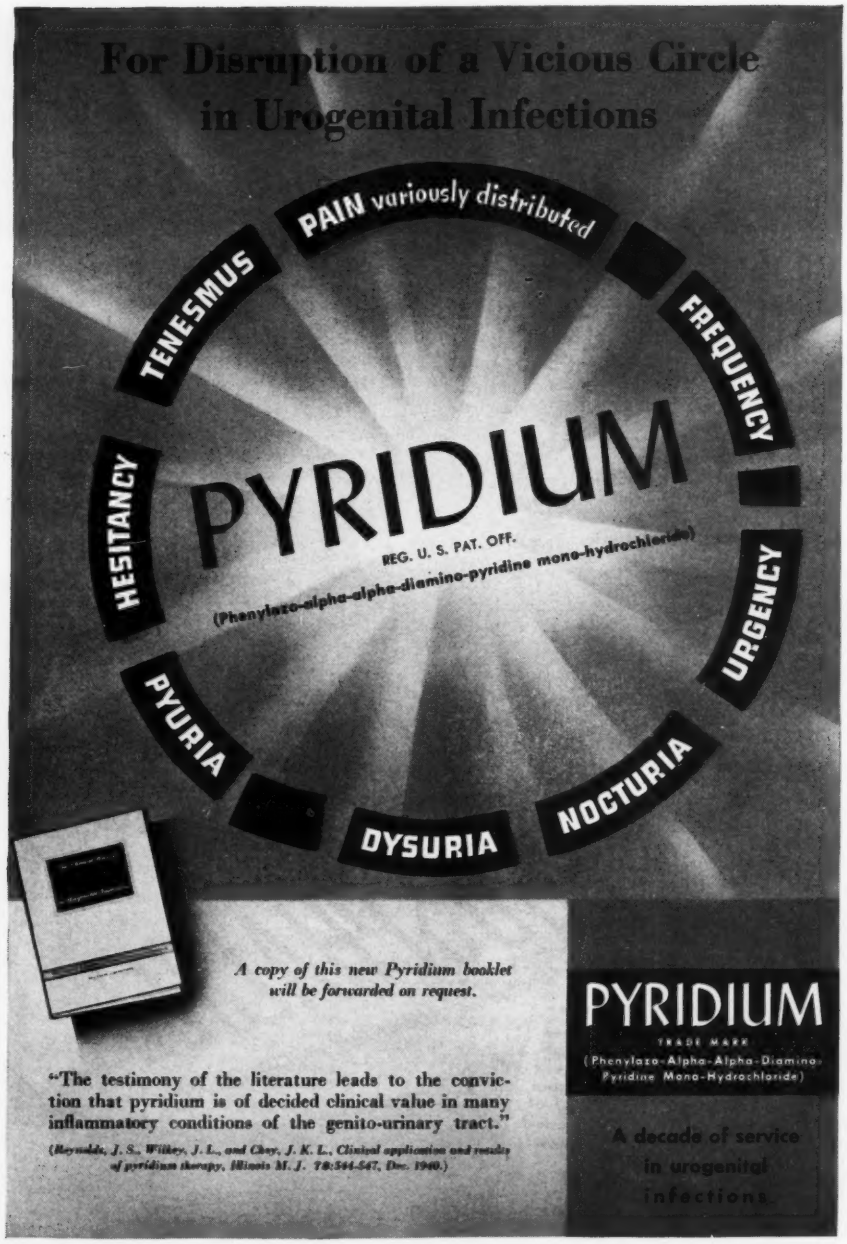
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A copy of this new Pyridium booklet will be forwarded on request.
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(Reynolds, J. S., Wilkey, J. L., and Choy, J. K. L., Clinical application and results of pyridium therapy, Illinois M. J. 78:544-547, Dec. 1940.)
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bland, lubricating bulk . . . non-irritating

non-digestible, and non-absorptive of fat-soluble vitamins

Mucilose

This highly purified hemicellulose is available in 4 oz. and 16 oz. bottles as Mucilose Flakes and Mucilose Granules; and in 4 oz. bottles as Mucilose Granules with Kasagra.

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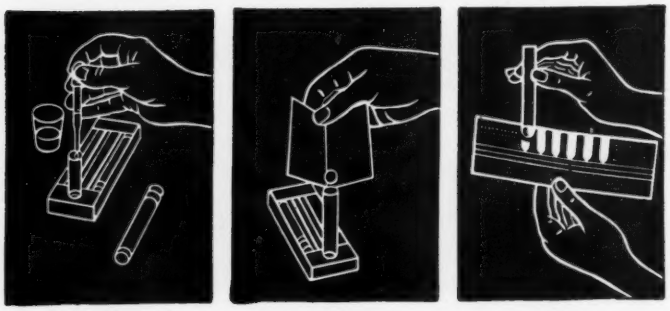
FOR LESS THAN *2 Cents!*

YOU CAN TEST FOR URINE-SUGAR WITH

CLINITEST

The New Tablet Method

JUST 3 SIMPLE STEPS INVOLVED:



❶ **5 drops urine** *plus* **10 drops water**

❷ **Drop in tablet**

❸ **Allow for reaction and compare with color scale**

DEPENDABLE—CLINITEST Tablet Method is based on same chemical principles involved in Benedict's test—*except*—no external heating required, and active ingredients for test contained in a single tablet. Indicates sugar at 0%, ¼%, ½%, ¾%, 1% and 2% plus.

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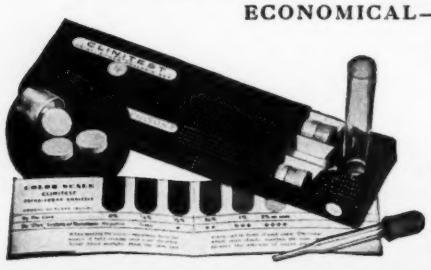

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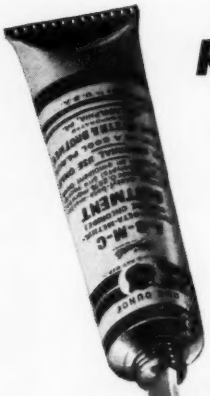

RELIEF FROM PAIN IN ARTHRITIS

*Wyeth's**

A-B-M-C

(ACETYL-BETA-METHYLCHOLINE CHLORIDE)

OINTMENT

WELCOME RELIEF—Arthritis patients find welcome relief from pain when Wyeth's A-B-M-C Ointment is prescribed for them.

LASTING EFFECT—An application of A-B-M-C Ointment, followed by heat, produces a prolonged rubefacient effect. The erythema lasts for more than six hours.† No urticaria is produced.†

EASY TO USE—For best results, a thin film of the ointment is spread over the affected part and heat is applied for twenty minutes. A convenient source of heat is provided by an ordinary 260 watt lamp, with reflector, held at a distance of one or two feet from the skin.

Wyeth's A-B-M-C Ointment is available at all drug stores in one ounce tubes.

PRESCRIPTION PACKAGE LABEL IS REMOVABLE

†Archives of Physical Therapy, **21**, 12 (Jan.) 1940 *Reg. U. S. Pat. Off.

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INTRODUCED in 1936, and since installed in hundreds of x-ray laboratories the world over, the G-E Maximar x-ray therapy unit continues to pile up tangible evidence of its year-round consistently reliable performance and low cost of maintenance.

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UNTIL SOMEONE OBTAINS A BONA FIDE SPECIMEN FOR CLINICAL TRIAL, WE SHALL NEVER KNOW

Thus the true value of adrenal cortex extract might never have been established had not adequate quantities of a potent material been made available for clinical trial. During the experimental period, when only small amounts of relatively impotent extracts were obtainable, opinions of the therapeutic value of the cortical hormones ran full gamut. Now, however, the efficacy of Sterile Solution Adrenal Cortex Extract (Upjohn) in the treatment of adrenal insufficiency is established, and other uses are under investigation.

STERILE SOLUTION ADRENAL CORTEX EXTRACT (UPJOHN) is available in 10 cc. rubber-capped vials

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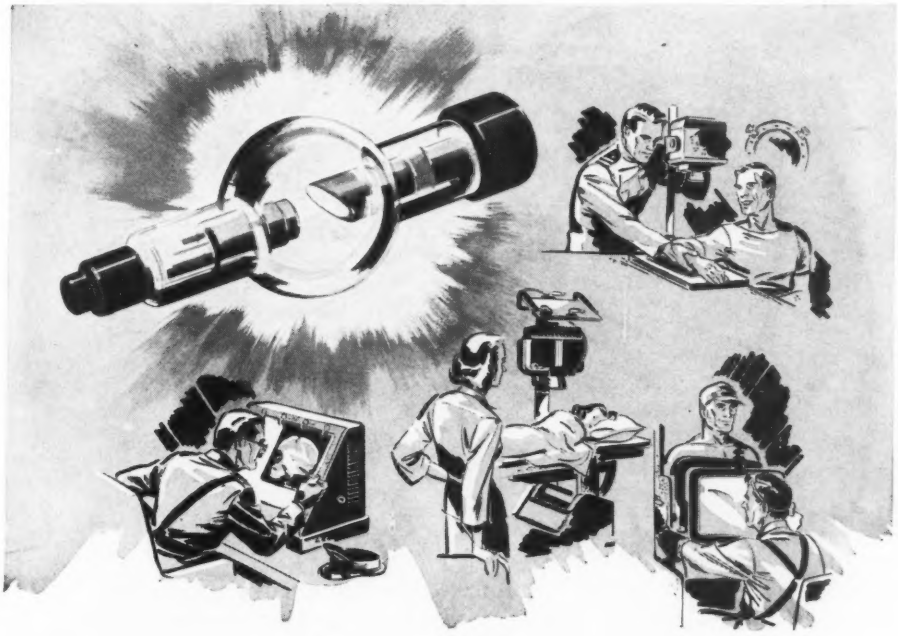

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The speed and vastness of this many sided job and the contribution of X-Rays to its success are a challenge to every man and woman in radiological work. You have risen to the occasion thus far . . . you will continue to be successful in meeting whatever problems lie ahead. Your equipment is good and your hands are skilled. Above all, you have a tradition of service to humanity.

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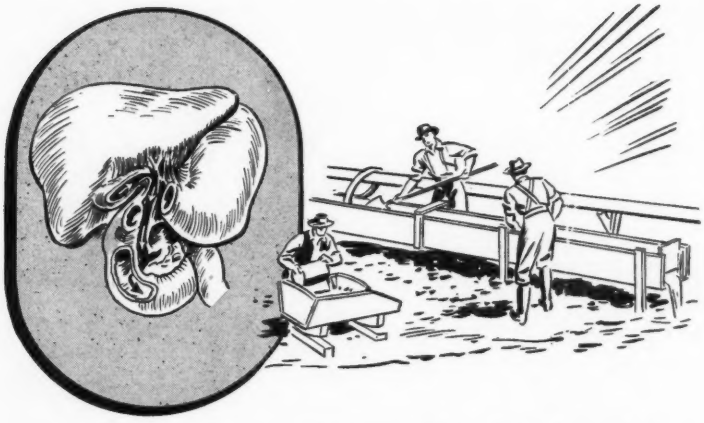

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Flush the bile ducts—but more, aid fat digestion! *Dehydrocholic* acid induces the liver to excrete more thin bile than any other known agent. *Desoxycholic* acid chiefly assists in the emulsification and absorption of fats and fats-soluble vitamins by the small intestine.

DOXYCHOL

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DOXYCHOL composed of dehydrocholic acid 3 grains and desoxycholic acid 1 grain is supplied in tablet form in bottles c 100, 500 and 1000.

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CREAMALIN contains no other therapeutic agent except aluminum hydroxide (5.5%). Ten years of use have demonstrated that this single ingredient offers every therapeutic effect needed for the purposes for which it is indicated.

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FOR THE PREPARATION AND STORAGE OF PLASMA

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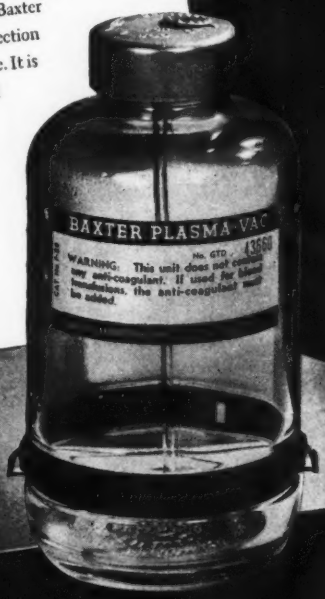
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WARNING: This unit does not contain any anti-coagulant; if used for blood transfusions, the anti-coagulant must be added.

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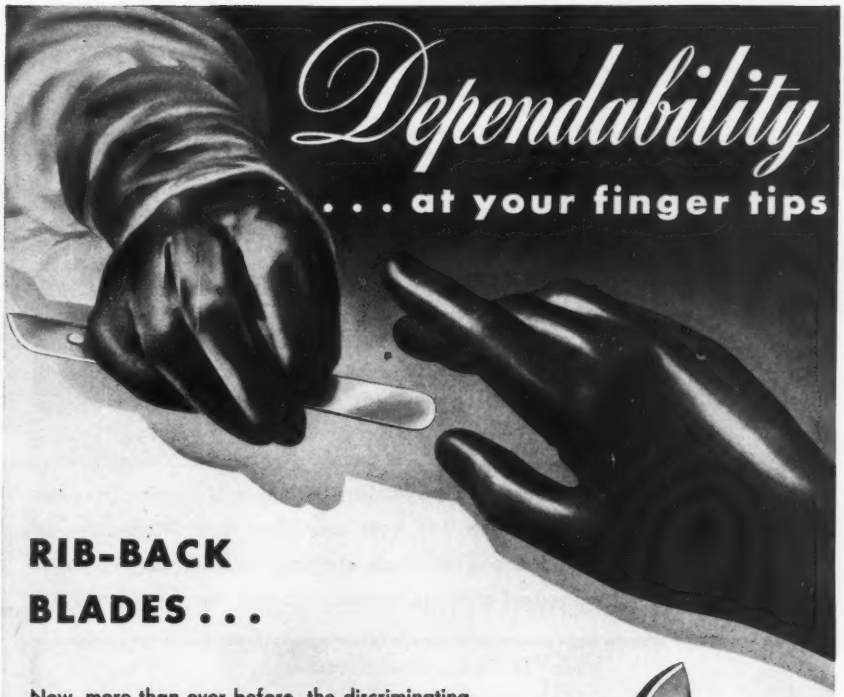

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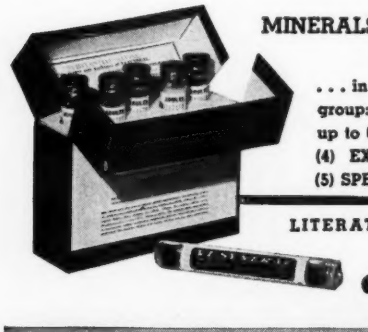

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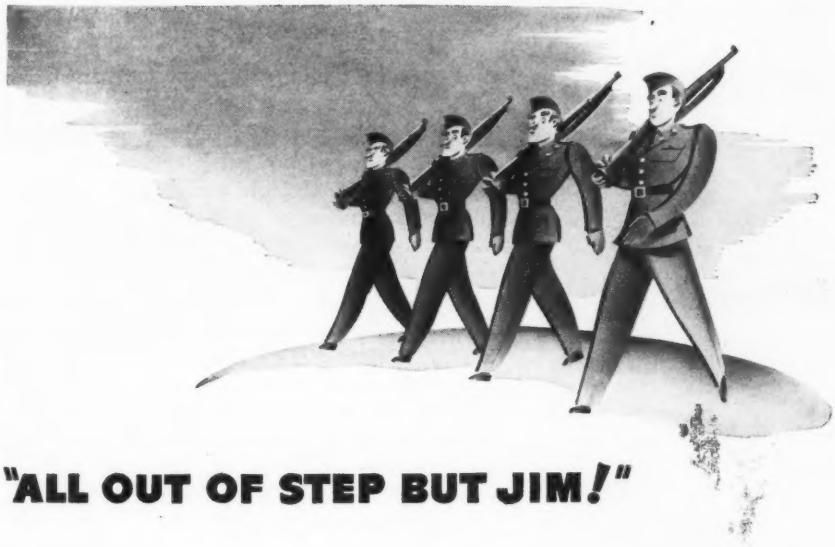

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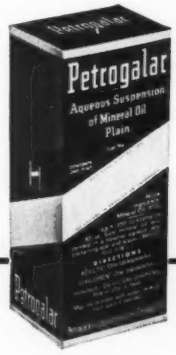

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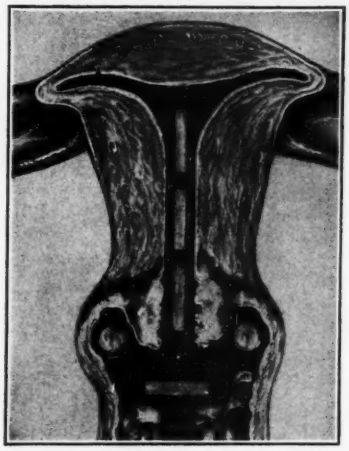

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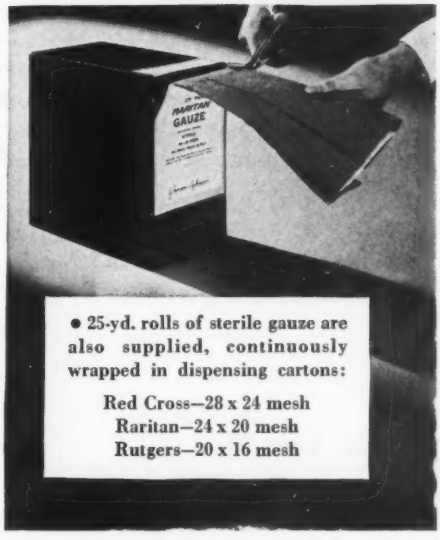

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1. Ivy, A. C.: J. A. M. A. 117:1151 (Oct. 4) 1941.

2. Lauda, E.: Cholangitis, in Piersol, G. M.: Cyclopedia of Medicine, F. A. Davis Co., 1940 vol. 4 p. 228.

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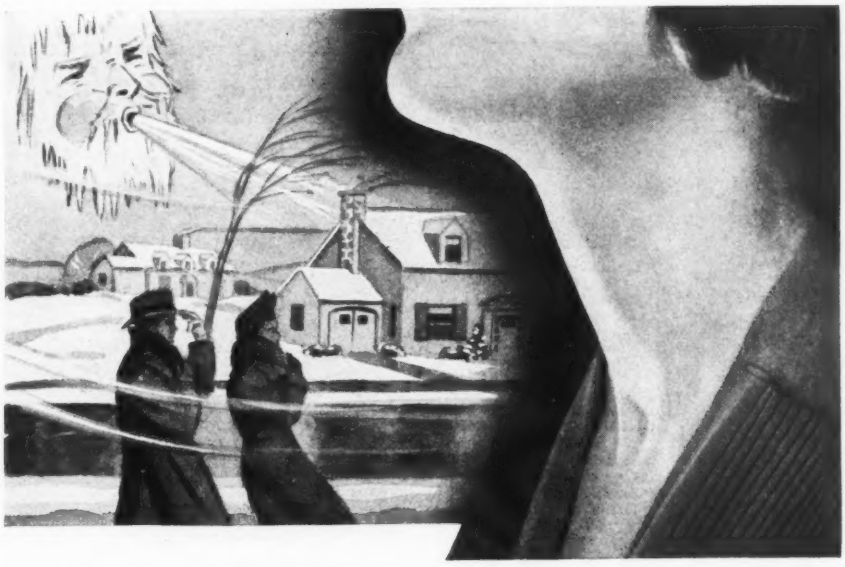

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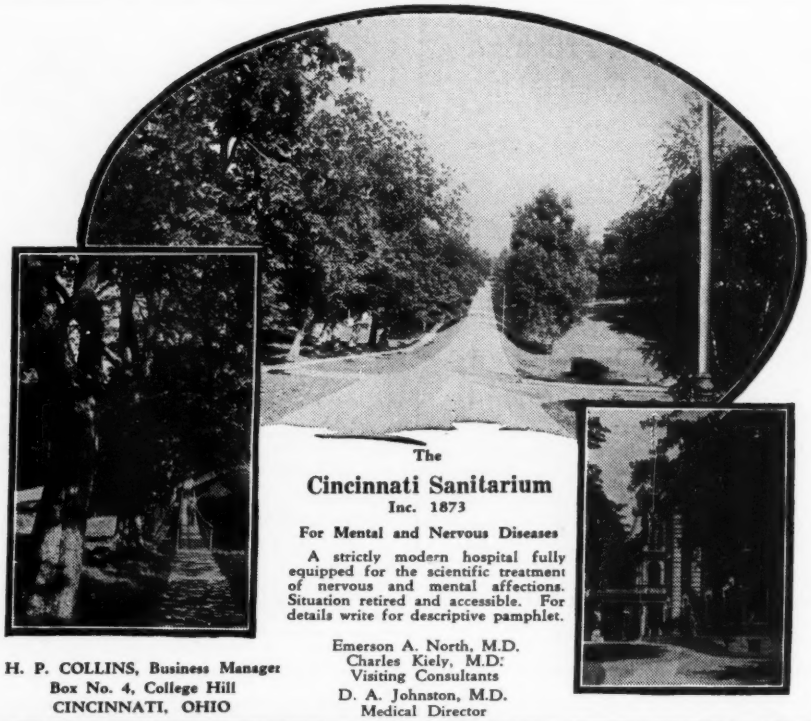

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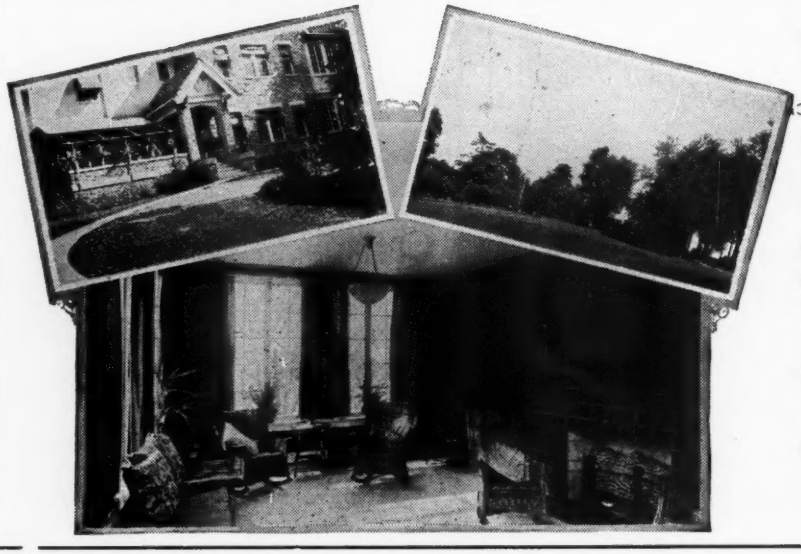

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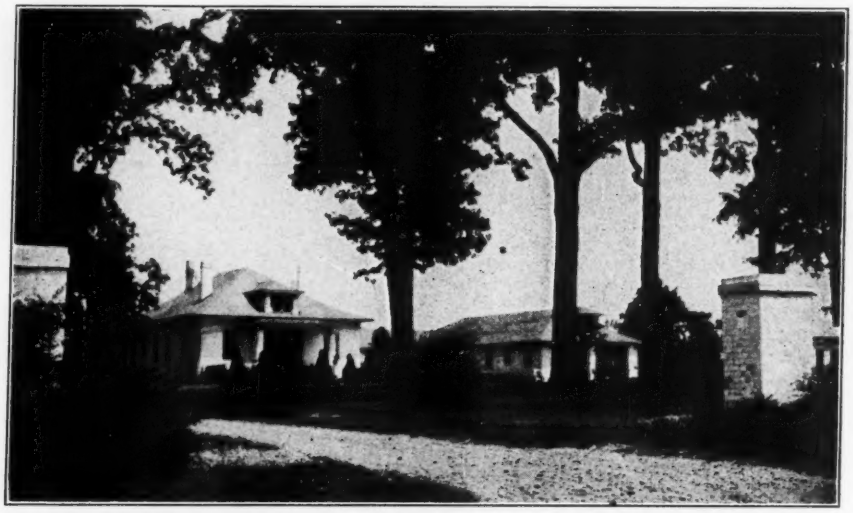

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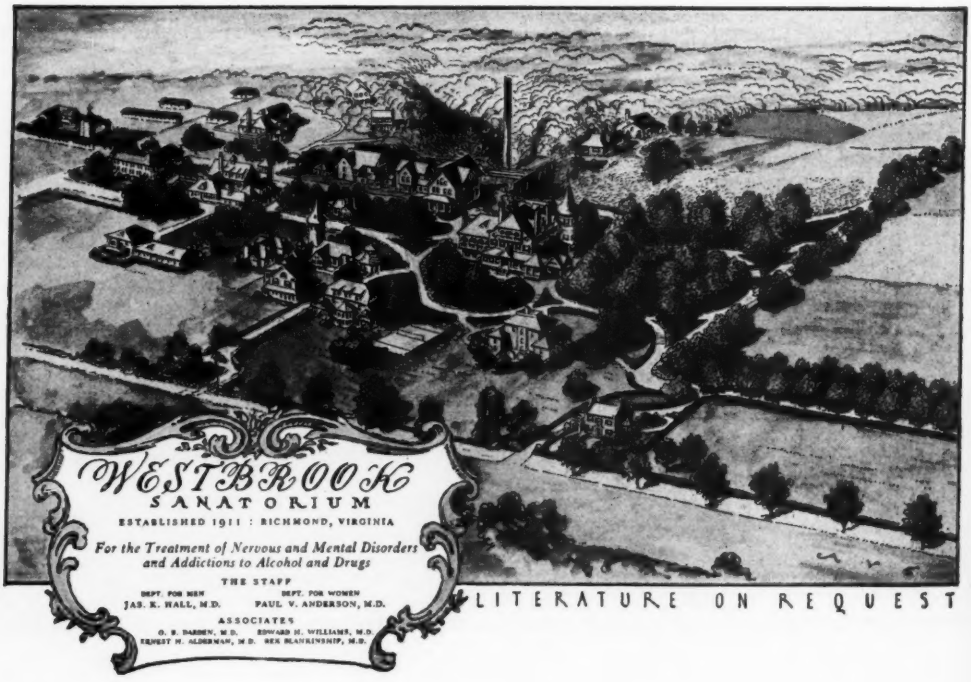
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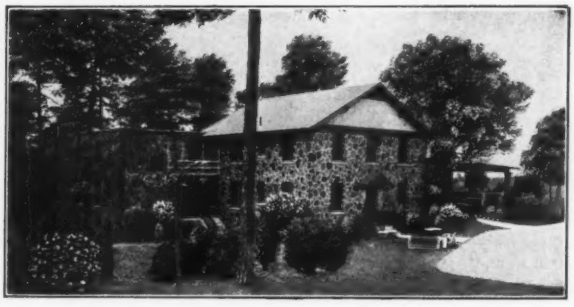

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Volume 35 NOVEMBER 1942 Number 11

CARCINOMA OF THE CERVIX*

CLINICAL EVALUATION OF RADIUM DOSAGE AND SUPPLEMENTARY ROENTGEN IRRADIATION BASED ON A STUDY OF 915 CASES

By HOWARD W. JONES, JR., M.D.
Baltimore, Maryland

A statistical analysis has been made of 915 histologically proved cases of carcinoma of the cervix treated at the Kelly Clinic from October 1, 1927, through December 31, 1935, the results of which are presented in the following report. These cases have been under the personal care of Dr. Curtis F. Burnam, Dr. William Neill, Jr., and Dr. Edmund B. Kelly. Cases treated prior to October 1, 1927, have been previously reported.[1] A survey of the recent literature on carcinoma of the cervix indicates a general tendency to base results of therapy on large groups of cases which have received variable amounts of therapy. A given cure rate loses significance if the treatment has been varied between too great extremes. For this reason, in the present report, the emphasis has been placed on the correlation of the clinical stage of disease, irradiation dosage and curability. A subsequent report will deal with the relation of these factors to the histologic appearance of the growth. However, these considerations, while of paramount importance, are by no means the only factors involved in the treatment and prognosis of a patient with carcinoma of the cervix. Due regard must be given to the general condition of the patient, the influence of syphilis and diabetes, the presence of secondary infection, anemia, condition of the urinary tract and rectum, to mention only a few.

It is also obvious that uniform treatment may yield different results due to such variables as size of the bony pelvis, obesity, and the presence of undetectable distant metastases. Over and above these tangible factors, it is the experience of all that patients with identical findings often respond differently to identical treatment. Therefore, while for statistical purposes, we have emphasized the relation between dosage and prognosis, it cannot be too clearly stated that the treatment of each case must be carefully planned with due regard for the individual factors.

Table 1 gives the 5 headings under which the cases have been grouped.

Primary Cases.—These patients had had no previous treatment.

Stump Cases.—Individuals of this group had previously been subjected to supracervical hysterectomy for various reasons. These cases are further subdivided into those in which the diagnosis of carcinoma of cervical stump was made within two years following hysterectomy, and those in which the diagnosis was made more than two years after hysterectomy. This subdivision serves the useful purpose of indicating that in the former group, one must suspect that the carcinoma was present but undiscovered at the time of hysterectomy, while in the latter, one may consider that the carcinoma arose subsequent to the operation. Most authors have accepted this two-year classification, and the vastly different prognosis in the two emphasizes its importance.

Cases Previously Treated Elsewhere.—These patients had all received x-ray or radium for carcinoma of the cervix before being referred to the Kelly Clinic. In many instances, the previous treatment was thoroughly adequate and the generally poor prognosis indicates the hopelessness of the group. Every patient in this group received additional treatment, and several cases seen in consultation after apparent cure from previous treatment elsewhere, in whom further treatment was not considered necessary, have not been included in the statistics.

Recurrent Cases.—These cases had been previously subjected to panhysterectomy for car-

*Received for publication May 30, 1942.
*From the Kelly Clinic.

DISTRIBUTION OF CASES

Primary	704	No previous treatment
Stump	51	Previous supravaginal hysterectomy
Previously treated elsewhere	79	Radium or x-ray, or both (still cancer)
Recurrent	66	After attempted surgery
Prophylactic	15	After radical surgery
Total	915	

Table 1

cinoma of the cervix, but had suffered recurrence of the growth.

Prophylactic Cases.—These cases had been subjected to panhysterectomy for carcinoma of the cervix and immediately referred to the Clinic for postoperative irradiation. In each instance, all visible growth had been removed at the time of operation. If, at the time of laparotomy, the operation was considered incomplete, the case has been classified in the recurrent group.

PRINCIPLES OF TREATMENT: PRIMARY CASES

For statistical purposes, all primary cases have been classified as to clinical stage according to the League of Nations classification (*Table 2*),[2] and further subdivided according to the treatment received. The method of radium application has remained unchanged for many years in this institution, and has been given in detail in previous communications.[3] Very briefly, it consists in the use of radon in a glass bulb which is enclosed in a brass capsule with wall thickness of 2 mm. The outside diameter of this cylindrical capsule is 6 mm. and its length, 11 mm. The inside glass bulb is 2 mm. in diameter. Two such capsules are placed in the cervical canal and a cloth plaque of from 5 to 8 capsules is placed against the vaginal portion of the cervix. Gauze packing is used to secure the greatest possible distance from bladder to rectum. A total of about 2,500 to 3,000 mc. is usually employed, so that the exposure is a matter of minutes. The treatments are routinely done in the knee-chest position, without anesthesia or hospitalization. There are, of course, exceptions to this plan. Some patients must be hospitalized and an anesthetic used. However, in a group of patients where economic factors are of great importance, the advantages of allowing the patient to remain out of the hospital while receiving treatment are obvious. During the years under consideration, the radium was usually given at a single treatment. Only occasionally, in seriously ill or infected patients, was the dose divided. At the present time, the divided dose technic is more frequently used. Intra-uterine treatment has never been employed in the routine initial therapy of cervix cases. This position has been taken because of the liability to spread of infection and bowel injury. However, it is highly desirable, as a routine, to do an intra-uterine curetting several weeks following the first series of treatments, and if growth is encountered, then additional treatment from within the uterus may be given.

CLINICAL STAGE OF PRIMARY CASES

Stage 1	87
Stage 2	124
Stage 3	240
Stage 4	253
Total	704

Table 2

A few cases have been treated wholly or in part with 0.5 mm. of platinum permanent radon points, about 6 mm. in length. It is our opinion that it is necessary to give at least twice as many millicurie hours by this method to equal the biological effect from a given dose as administered by the previously mentioned procedure.

In the period under consideration, from 1927 to 1936, roentgen irradiation was not carried out so routinely or in such high dosage as is practiced at the present time. Two sacral and two pubic portals were usually used and rarely the perineal and trochanteric. The factors follow: 264 or 280 K.V., 30 MA., 1 mm. copper plus 1 mm. aluminum filter, skin target distance 50 cm., 20x20 cm. portals were frequently used, and often an erythema dose was given at one sitting. Fractionation was also employed.

At this clinic, x-ray has always been given after the radium and is usually started within six weeks. At the present time, the x-ray is routinely fractionated and smaller, more numerous portals are used. We realize that the pre-radium use of x-ray has been widely adopted because it reduces the pre-existing cervical infection and makes the field more suitable and safer for radium application; however, it is our opinion that this end may also be accomplished by the fractionation of the radium dosage, a principle now employed. This has the further advantage that the available skin area may be used entirely for x-ray treatment to the para-

metrial and iliac gland regions. Furthermore, the local use of the sulfonamide compounds is a simple and efficient method of combating local infection.

The primary cases have been divided, according to the treatment received, as follows:

Under 2,500 mc.h.—In almost all instances, treatment was given at one sitting. In stage 1 cases, the radium was given as a curative dose, while in stage 4 cases, it was given for palliation only. In other groups, this dosage was usually given as an initial treatment and for various reasons, the treatment was not concluded.

3,000 mc.h.—This group includes all cases receiving from 2,800 to 3,500 mc.h.

Over 3,500 mc.h.—In almost all cases, these treatments were given by the divided dose technic. Many of these patients had a high total dose because of the use of platinum permanent points, the biological effect of which is about one-half that of the tube technic.

Radium and X-ray.—All of these patients received supplementary roentgen irradiation after treatment with radium. The x-ray factors have been given above. The x-ray dosage is not at all comparable to our present practice as most patients received only a total of from 3,200 to 4,000 r. (measured with back-scatter). A few cases received up to 8,000 r. and four group 4 patients received the entire radium treatment and 8,000 r. of roentgen irradiation in a single day. It is obvious that if a satisfactory evaluation of supplementary x-ray is to be obtained, the primary radium treatment must also be given adequate consideration. Therefore, the cases receiving supplementary x-ray treatment have been classified into the above 3 groups, depending upon the preliminary radium treatment received. In practice it was found that very few cases had received over 3,500 mc.h. of radium followed by x-ray, and these few cases are considered with those receiving 3,000 mc.h. so that only two groups are shown in the tables. In the preliminary analysis, the cases were further subdivided, according to the amount of x-ray received, but since the average x-ray dosage in

RESULTS OF TREATMENT: STAGE 1

	Total Cases	5-Year Survivals	Died of Disease or Other Conditions	Unfollowed	Absolute Cure Rate Per Cent
2800 mc.h.	35	21	12	2	60.0
3000 mc.h.	31	21	9	1	67.8
Over 3500 mc.h.	7	2	5	0	28.5
2800 mc.h. plus x-ray	5	2	3	0	40.0
3000 mc.h. plus x-ray	9	4	5	0	44.5
	87	50	34	3	57.5

Table 3

GROUP 1 CASES RECEIVING OVER 3500 MC.H.

Case No.	Mc.h. Tubes	Mc.h. Points	Total Mc.h.	Result
24496	2490	1463	3953	Died
25101	1000	2666	3666	Died
25397	2000	2926	4926	Died
25424	3910	——	3910	Well 9 yrs.
25928	2399	2593	4992	Died
26580	4599	——	4599	Died
27735	4478	——	4478	Well 6 yrs.

Table 4

the entire series is relatively low (average about 3,600 r.), it was found that a subdivision below this figure was of no practical importance as the salvage rate in each subdivision was essentially the same. Any case receiving at least 1,000 r. has been included in the radium and x-ray group.

ANALYSIS OF RESULTS: PRIMARY CASES

There are 704 cases for analysis. *Table 2* gives the distribution of these cases according to the clinical stage as suggested by the League of Nations Committee.

It should be noted that the cure rates are absolute, as no case has been refused treatment. This policy is justified by the occasional unexpected cure of an apparently hopeless case. The following history of such a patient can no doubt be duplicated in the files of any radiologist of experience.

Mrs. P. C. (26094), aged 26 years, seen December 20, 1932, had had irregular vaginal bleeding during a period of two years, with profuse bleeding for two months. She had been growing progressively weaker for six months, and complained of constant pain in the left hip. On physical examination, she was extremely emaciated, weighing only 84½ pounds, with legs which were pipestem in character. There was shortness of breath on exertion, and a foul odor could be detected on entering her room. Pelvic examination showed the cervix to be flush with the vaginal vault and of stony hard consistency. On inspection, the cervix was found to be displaced by a massive, bleeding growth, as far up in the canal as one could determine. The fornices were obliterated, and biopsy showed epidermoid carcinoma of the cervix. Rectal examination showed the right parametrium to be completely infiltrated; the left parametrium was also involved to the pelvic wall, but less than the right, and the cervix retained a very slight degree of movability. The case was considered hopeless and the note by the examining physician says "Treatment is probably useless." However, she was given 2,665 mc. in and on the cervix for 45 minutes and sent home the same day. A note to the referring physician requested that if she showed improvement, she should return for additional treatment. The doctor replied that she did improve and he advised her to return, which she did not do. The case was lost sight of for several years, but on November 15, 1941, nine years later, in reply to a letter of inquiry, she said she was well and had received no additional treatment.

RESULTS OF TREATMENT: STAGE 2

	Total Cases	5-Year Survivals	Died of Disease or Other Conditions	Unfollowed	Absolute Cure Rate Per Cent
2800 mc.h.	22	6	15	1	27.3
3000 mc.h.	44	18	23	3	41.0
Over 3500 mc.h.	26	10	14	2	38.5
2800 mc.h. plus x-ray	9	6	3	0	66.6
3000 mc.h. plus x-ray	23	10	11	2	43.5
	124	50	66	8	40.3

Table 5

RESULTS OF TREATMENT: STAGE 3

	Total Cases	5-Year Survivals	Died of Disease or Other Conditions	Unfollowed	Absolute Cure Rate Per cent
2800 mc.h.	32	3	25	4	9.5
3000 mc.h.	93	18	70	5	19.4
Over 3500 mc.h.	35	11	23	1	31.5
2800 mc.h plus x-ray	14	4	9	1	28.5
3000 mc.h. plus x-ray	66	16	46	4	24.3
	240	52	173	15	21.7

Table 6

Detailed analysis of results again emphasizes the fact brought out by many observers that the clinical stage of disease is of paramount importance in determining the prognosis. Reference may be made to *Tables 3, 5, 6* and *7* for details. *Table 8* is of special interest to us, as it summarizes the effect of dosage on prognosis. It indicates that with a technic using large amounts of radium, it is exceedingly dangerous to go below the 3,000 mc.h. level. As may be seen in the table, using 2,800 mc.h., the cure rate is 22.5 per cent with favorable material, 43 per cent of the cases being clinically either stage 1 or 2. On the other hand, the cure rate remains about the same, or 21.8 per cent, in the group with adequate radium plus x-ray therapy, in spite of the fact that the material is much more unfavorable, containing only 21 per cent stage 1 and 2 cases. This same tendency is evident from an analysis of the cases according to the clinical stage of the disease and dosage, as in *Tables 3, 5, 6* and *7*. From a strictly statistical point of view, however, when the cases are broken down according to the clinical stage, there are insufficient cases to speak with certainty about the dosage. However, the more favorable outcome with higher dosage is, nevertheless, indicated conclusively in *Table 8*.

Certain minor points may be commented upon. In stage 1 cases, treated with more than 3,500 mc.h., the survivals are surprisingly low. On further studying these cases, it seems significant to us that the majority were treated at least in part with platinum points, the biological action of which is roughly one-half that administered with tubes. The details are given in *Table 4*. The survival rate in stage 1, treated by radium and x-ray, was unfavorably influenced by the death of 3 patients in this small subdivision from unrelated causes in the fourth year after treatment, without evidence of recurrence.

A problem of current interest is the value of x-ray as an adjunct to radium in the treatment of carcinoma of the cervix. From the survival rates shown herein, there can be no doubt that supplementary x-ray is of great value. This is particularly true of clinical stage 2 and 3. Its value is also seen in *Table 8* where the survival with supplementary x-ray in the most unfavorable case distribution is equal to that of radium alone in the more favorable cases. This is doubly emphasized when one considers that x-ray dosage used upon the cases reported is less than now employed.

STUMP CASES

Table 9 bears out the consensus of opinion expressed in the recent literature that the prognosis in stump cases as a group, is somewhat better than in primary cases as a whole. This is true only if the diagnosis of carcinoma has been made two years or more after the supra-cervical hysterectomy. In 16 stump cases, occurring before the two-year limit, only two cures resulted. Such poor results are largely due to the fact that this group represents those cases in which the diagnosis of carcinoma had been missed.

We do not feel that it is clinically possible or desirable to separate stump cases into clinical stages. The principles of treatment of carcinoma of the cervical stump are similar to those for primary cases with, however, due regard to the changed anatomical relationship such as the proximity of the bladder. As an average, our radium dosage has been somewhat lower than on primary cases, and frequently either none or only one tube is used in the cervical canal.

RESULTS OF TREATMENT: STAGE 4

	Total Cases	5-Year Survivals	Died of Disease or Other Conditions	Unfollowed	Absolute Cure Rate Per Cent
2800 mc.h.	44	0	40	4	0
3000 mc.h.	92	4	83	5	4.3
Over 3500 mc.h.	36	3	31	2	8.3
2800 mc.h. plus x-ray	28	1	26	1	3.6
3000 mc.h. plus x-ray	53	3	48	2	5.7
	253	11	228	14	4.3

Table 7

RECURRENT CASES

One of the most gratifying figures obtained in this survey is the salvage rate in this group (*Table 10*). Most recurrences are located first in the vaginal vault and later in the parametrial regions. Treatment consists of a radium plaque in the vaginal vault, giving from 1,000 to 1,500 mc.h. in a single treatment, with the addition of thorough roentgen irradiation. One would expect a high incidence of fistula formation in this group and in the stump cases, but this has not been borne out by our experience.

PROPHYLACTIC CASES

Only cases in which all gross evidence of growth was removed at operation have been included in this group (*Table 11*). Even with supplementary x-ray, a salvage rate of only 40 per cent in this small series does not compare favorably with the radium cure rate in stage 1, or even stage 2 primary cases with which these prophylactic cases must be compared. This point, however, should not be unduly emphasized as the group is too small for accurate statistical purposes.

RELATION OF TREATMENT DOSAGE TO PROGNOSIS

Treatment	Clinical Stage	No. Cases	Cures	Per Cent Cures	Per Cent Favorable Cases, Stages 1-2
2800 mc.h.	1	35	21		
	2	22	6		
	3	32	3		
	4	44	0		
		133	30	22.5	42.8
3000 mc.h.	1	31	21		
	2	44	18		
	3	93	18		
	4	92	4		
		260	61	23.4	28.8
3500 mc.h.	1	7	2		
	2	26	10		
	3	35	11		
	4	36	3		
		104	26	25.4	31.7
(3800 mc.h.	1	5	2		
(plus x-ray	2	9	6		
	3	14	4		
	4	28	1		
		56	13	23.2	25.0
(3000 mc.h.	1	9	4		
(plus x-ray	2	23	10		
	3	66	16		
	4	53	3		
		151	33	21.8	21.2
All treatment		704	163	23.2	30.0

Table 8

RESULTS OF TREATMENT: STUMP CASES

	Total Cases	5-Year Survivals	Died of Disease or Other Conditions	Unfollowed	Absolute Cure Rate Per Cent
Diagnosis less than 2 years after hysterectomy	16	2	14	0	12.5
Diagnosis after 2 years following hysterectomy	35	12	20	3	34.3

Table 9

RESULTS OF TREATMENT OF RECURRENT CARCINOMA OF CERVIX

Total	5-Year Survivals	Died of Disease or Other Conditions	Unfollowed	Absolute Cure Rate Per Cent
66	16	50	0	24.3

Table 10

RESULTS OF TREATMENT OF PROPHYLACTIC CASES

Total	5-Year Survivals	Died of Disease or Other Conditions	Unfollowed	Absolute Cure Rate Per Cent
15	6	9	0	40.0

Table 11

PREVIOUSLY TREATED ELSEWHERE

The cases in this class form such a heterogeneous group that each one must be carefully individualized (*Table 12*). No routine treatment can be employed with such patients, and generally speaking, the treatment administered must be integrated with previous exposures and local situations.

SUMMARY AND CONCLUSIONS

The material of this report does not lend itself to further condensation. The relation between clinical stage, irradiation dosage, and prognosis, is of great importance and has been emphasized in this study. Reference must be made to preceding tables for details. However, the prognosis in carcinoma of the cervix is also a function of many other factors such as general condition of the patient, presence of syphilis, diabetes and other medical conditions, age, anemia, condition of urinary tract and rectum, size of the bony pelvis, obesity, the severity of the secondary infection, and the histologic appearance and biological behavior of the growth, to mention only a few.

The current routine of treatment at the Kelly Clinic differs in some respects from that described for the treatment of the cases discussed herein. It is the result of experience with over 3,000 cases of carcinoma of the cervix, and we anticipate a somewhat more favorable cure rate than is reported herein. However, this and other studies have served to emphasize the limitation of irradiation in treating carcinoma of the cervix.

Hospitalization is usually unnecessary, except under special circumstances. Treatment can be conveniently carried out upon an ambulatory patient, and the economy and comforts of home are of prime importance, especially to those of moderate circumstances.

Preliminary studies include a thorough general and pelvic examination, blood and serologic tests, as well as urine, proctoscopic and cystoscopic examinations when feasible. Biopsy is essential.

Radium is administered by the broken dose technic usually at four weekly intervals, giving a total dose of about 4,000 mc.h., administered with the applicators described in the body of the paper. It should be pointed out that this dosage is applicable only with the applicators and amounts of radon specified and cannot be compared with other methods. The broken dose technic is used because it is helpful in reducing preexisting cervical infections in the same manner as pre-radium x-ray, with the additional advantage that the skin area available for x-ray is used for treatment directed primarily to the parametria and iliac gland areas. Further, there is a lessened incidence of troublesome proctitis with the broken dose method.

Roentgen irradiation is used routinely and in much higher dosage than formerly. Smaller, more numerous portals are used (10x7 cm. to 15x10 cm.). The beam is directed toward the parametrium and iliac gland region of the side in question and not toward the midline. Pubic, sacral, trochanteric and perineal portals are employed and sometimes two small portals for each of these areas are substituted. Fractionation is routinely practiced and a dosage of from 1,500 to 2,000 r., measured with scattering, is given to each portal. X-ray must not be withheld even in the absence of palpable disease of the parametria.

Furthermore, sulfonamide powders, chiefly as sulfanilamide and sulfathiazole, have been used as a local agent to reduce cervical infection. This is conveniently applied with a powder insufflator, and may be done daily, or less often, as indicated. Whether this will improve the salvage remains to be seen, but it is the most helpful agent so far discovered to combat infection. We have seen striking relief in pelvic pain which in many instances is due to infection rather than growth in carcinoma of the cervix.

RESULTS OF TREATMENT OF CASES PREVIOUSLY TREATED ELSEWHERE

Total	5-Year Survivals	Died of Disease or Other Conditions	Unfollowed	Absolute Cure Rate Per Cent
79	11	66	2	14.0

Table 12

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OBSERVATIONS ON THE RESULTS OF COMBINED FEVER AND X-RAY THERAPY IN THE TREATMENT OF MALIGNANCY*

By HEDDY S. SHOULDERS, M.D.
EDWARD L. TURNER, M.D., F.A.C.P.
and
LAWRENCE D. SCOTT, M.D.
Nashville, Tennessee

During the last fifty years evidence has gradually accumulated that fever may affect the progress of certain tumors. It will be recalled that in 1892 Coley[1] introduced the use of mixed toxins of streptococcus of erysipelas and Bacillus prodigiosus in the treatment of inoperable sarcoma. His method was to begin treatment by the injection of small initial doses into the growth, or in its immediate neighborhood, and then increase the size of the dose until a febrile reaction was obtained. In Coley's hands some brilliant results were observed. Ashhurst,[2] using Coley's fluid on numerous occasions, noticed the tumor grow smaller, pain and discomfort decrease and the patients markedly improve. Even prior to Coley's observations Ashhurst said:

"It has been a clinical observation for nearly fifty years that attacks of erysipelas occasionally have a healing influence on malignant growths; and it is not an illogical theory that bacterial toxins might influence tumor cells favorably."

These earlier investigators were thinking in terms of bacterial toxins rather than in terms of the possible action of fever.

Rohdenburg and Prime[3] in a study of regression of human cancer noted spontaneous cures following acute febrile attacks. DeCourcy[4] also noted that the regression of human cancer had occurred after attacks of malaria, typhoid fever and tuberculosis.

Warren[5] observed the effects of fever on malignant tissue *in vitro* by exposing slices of tumor tissue to temperatures of 41.5 to 42.0 degrees C. and noted that there was a definite lethal time-temperature relationship which was variable with different types of tumors. He also noted that

"High febrile temperatures of some duration do cause destruction of actively growing, virulent, transplantable animal tumor cells."

Later Warren and his associates subjected 32 cases of hopeless malignancy that had been carefully studied, biopsied and explored to fever therapy. Eighteen of these cases had received deep x-ray or radium therapy without results and 14 had received no treatment prior to fever therapy. Four of this group received no subsequent treatment after fever while the remainder received palliative deep therapy a month or more after fever as return of symptoms indicated. A few of his cases received radiation shortly after fever treatment. Improvement, lasting from one to six months, was noted in all but three of these patients. His patients gained in weight, the tumors shrank in size, and his patients' comfort and life span were extended.

Doub,[6] utilizing Warren's suggestion, administered fever therapy at weekly intervals and deep x-ray therapy at intervals of two months to an osteogenic sarcoma of the clavicle. He observed a rapidity and completeness of healing exceeding that observed in other cases which he had treated with radiation alone.

Delario,[7] in reviewing the methods of enhancing roentgen ray action again pointed out the fact that highly malignant and fast growing tumors disappear with attacks of erysipelas.

Overgaard,[8] using white mice, demonstrated that it was possible to exert a healing influence upon implanted tumors by the use of short and ultra short waves. He interpreted this as being a simple heat reaction. No x-ray therapy was used in his experiments.

Berkman and Dessauer[9] noted some improvement in a hopeless tumor case by combining diathermy and x-ray therapy. They interpreted this as the result of provoking a sensitive phase in the tumor that made it more responsive to x-ray therapy.

Shoulders, Turner, Scott and Quinn[10] reported observations upon the combined use of artificial fever and x-ray therapy on a series of far advanced malignant cases noting definitely beneficial results. These authors felt that the administration of the x-ray therapy while the patient's temperature was elevated from the artificial fever brought about an intensification of the destructive effect of the radiation on the malignant tissues that was not obtainable if a time interval elapsed between the two therapeutic procedures.

Recently Sugiura[11] has reported on the combined effects of x-ray and fever as compared to

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*From the Departments of Radiology and Internal Medicine, Meharry Medical College, Nashville, Tennessee.

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the combined effects of x-ray and cold on mouse sarcoma 180. He noted a definite increase in tumor regression when irradiated with x-rays *in vivo* followed by repeated exposure to ultra short radio waves. When tumors were irradiated with x-rays *in vivo* followed by confinement of hosts in a refrigerator there was a definite decrease in the number of tumor regressions.

Gradually accumulating evidence has therefore indicated that prolonged hyperpyrexia is lethal for certain tumor cells and that, in some way, shorter periods of hyperpyrexia render such tumor cells more susceptible to the destructive effects of x-rays. On the basis of these facts the present authors felt that the maximum destructive effect of x-ray therapy should be obtained by applying it at the time of greatest physiological disturbance from the artificially induced fever. It is conceivable that any time interval between the peak of hyperpyrexia which would allow for defervescence prior to the application of x-ray therapy might permit considerable recovery on the part of the tumor cells with an associated loss of any increased sensitivity to radiation that might have been induced by the fever. In an attempt to obtain maximal results from the combined procedures all of the patients reported in this paper were subjected to x-ray therapy immediately following the application of artificially induced fever while the hyperpyrexia was present.

Fifty far advanced, inoperable cases of malignancy were selected for these studies. These cases were all thoroughly studied and carefully worked up by the service to which they were admitted. In our institution it is required that all actual or suspected tumor cases be referred to the tumor clinic for consultation prior to undertaking any therapeutic measures. Cases deemed operable by the tumor clinic are then referred to the appropriate service for surgical and any other procedures indicated. Cases considered inoperable are placed under the supervision of the departments of radiology and medicine. Material for biopsy study is reported by the department of pathology.

The department of medicine then undertakes the preparation of the patient for combined fever and x-ray therapy. Naturally there have been many cases brought to the clinic whose condition was such that any form of therapy except simple palliation was contraindicated. Such cases were discharged and referred back to their local physicians. Cases for whom the combined therapeutic procedures were advised were given preliminary supervision during which adequate fluid and sodium chloride administration was given. At least 10 grams of excess sodium chloride was administered the day before fever therapy. This can be given in 0.5 gram gelatin capsules administering 2 every hour with a half glass of water until the desired amount has been given. Failure to insure adequate chloride and fluid intake before and after fever therapy can result in serious symptomatology that may be entirely avoided by their use.

About an hour before the patient is placed in the fever cabinet phenobarbital, 0.10-0.20 gram, is administered. This avoids undue restlessness and results in a more cooperative patient.

Hyperpyrexia has been induced in all of these patients in a very simple fever cabinet. The patient is placed on a thin pad over a rubber mattress filled with air and water. The heating element is under the mattress. The apparatus is pre-heated for about one hour before the patient is placed in the cabinet. The actual temperature inside the cabinet rarely exceeds 100°-101° F. A humidifier at the foot of the cabinet increases the moisture content in the interior so that the patient is unable to regulate his temperature at the level of the cabinet itself and it gradually rises to the desired elevation. All temperature recordings are taken by rectal measurement. Temperature is continuously recorded by an electric thermometer attached to the thermocouple placed in the patient's rectum.

It requires from one and a half to two hours for the patient's temperature to reach a level of from 104° to 106° F. The maximum temperature obtained depends upon the condition and reactions of the patient.

Once the desired elevation of temperature is reached it is maintained for an hour. The patient is then transferred to the x-ray therapy room. It is important to have the patient fully protected by blankets during this transfer and it is essential to have the x-ray therapy room warm and without draughts. The patient is kept well wrapped except for the portion of the body exposed to x-rays during the radiation procedure.

In order to help prevent x-ray reactions the patient is given 50 to 100 milligrams of nicotinic acid three times daily.

The number of combined fever and x-ray treatments in the group of patients reported in this paper has varied from one to four depending upon the lesion and its location. Addi-

tional x-ray therapy alone has been administered in all cases.

X-ray therapy has been given with one 200 K.V.P. and one 220 K.V.P. machine. Details regarding x-ray dosage, filtration, number of treatments, etc., have been presented in another paper.[12]

RESULTS

Table 1 lists the types of malignancies studied in this series of cases. The largest group consists of fifteen far advanced, inoperable squamous cell carcinomas of the cervix and two adenocarcinomas of the body of the uterus. Thirteen of this group of seventeen cases showed clear-cut improvement which consisted in cessation of bleeding, healing of ulcerated areas, decrease in the size of mass, marked change in the general condition and comfort of the patient, gain in weight and relief from pain. Six of these cases have died at periods of from two to fourteen months following the combined fever and x-ray therapy. In observing the course of events between treatments and their death the symptomatic improvement brought about entirely justified the method used. These cases received from one to three combined fever and x-ray treatments with additional x-ray therapy as indicated. Two of the squamous cell carcinoma cases have now survived sixteen months and apparently are doing well.

RESUME OF THE RESULTS OF COMBINED FEVER AND X-RAY THERAPY IN THE TREATMENT OF FAR ADVANCED MALIGNANCY

Site of Primary Lesion	Number of Cases	Cases Improved	Cases Not Improved
Carcinoma of the cervix	15	11	4
Carcinoma of the uterine body	2	2	0
Carcinoma of the breast	12	10	2
Carcinoma of the vulva	1	1	0
Osteogenic Carcinoma	4	4	0
Myxosarcoma	3	3	0
Melanosarcoma	3	1	2
Carcinoma of the urinary bladder	1	1	0
Carcinoma of the kidney	1	1	0
Seminoma from testicle	1	1	0
Carcinoma of the rectum	1	0	1
Carcinoma of the stomach	2	0	2
Carcinoma of the prostate	2	2	0
Carcinoma of lung (bronchogenic)	1	1	0
Carcinoma of larynx	1	1	0
Totals	50	39	11
Percentage of cases definitely improved			78
Percentage of cases not improved			22

Table 1

Twelve inoperable breast malignancies make up the second largest group of cases. There were marked metastatic lesions in the skeleton in two of these cases and no demonstrable relief could be obtained in these. All ten of the remaining breast malignancies showed definite improvement. Two of the cases were first seen with large ulcerative lesions with foul smelling secondary infections. All of this group had metastatic lesions in the axillary nodes. The ulcerated cases showed a remarkable clearing up of the necrotic areas. One of them completely healed a tremendous ulcer with an associated disappearance of the axillary nodes. Marked reduction in the axillary nodes occurred in all of these cases. This group also includes a case which had undergone a bilateral mastectomy prior to entering the clinic. At the time of her admisison in October, 1940, she had an enlarged nodular liver with ascites and with a small amount of pleural effusion. Following fever and x-ray therapy the patient had a stormy period during which frequent abdominal paracentesis was necessary. The liver was greatly reduced in size, ascitic accumulations became less troublesome and at the present time the patient is still surviving and relatively comfortable. Her last x-ray treatment was in April, 1941.

Striking results have been observed in a group of four osteogenic sarcomas. Three of these cases, the first treated in October, 1939, have shown complete disappearance of the sarcomatous mass. Two appear to be clinically healed while the third shows continuous improvement. When first seen one of these cases showed complete destruction of the upper one-third of the shaft of the left humerus with severe pain in the chest from metastatic lesions in the ribs. There was one pathologic rib fracture. The condition of the patient was so grave that arrangements were made with the family to obtain an autopsy. Fever and x-ray were advised as a means of relieving some of the pain. Since August, 1940, this patient has made steady improvement. The rib lesions have disappeared, the rib fracture healed and the upper end of the left humerus continues to show regenerative processes. The patient, a negro minister, has been leading an active life during the past year. He has gained forty pounds and, except for some preternatural mobility of the left arm, is in excellent health.

The combined method of treatment for carcinoma of the prostate has given marked relief from the pain of bony metastases.

In June, 1941, a case of bronchogenic carcinoma of the right lung was admitted for combined treatment. The patient had been ill with lung trouble for two years. X-ray films demonstrated a tumor mass in the right base with evident collapse of the right lower lobe and marked mediastinal shift to the right. Biopsy material obtained by bronchoscopy was positive for bronchogenic carcinoma. The patient was given four combined fever and x-ray treatments with additional x-ray therapy. Following the combined treatments there was a marked diminution in the size of the tumor, the massive collapse of the right lower lobe disappeared and there was a restoration of the normal mediastinal position. The patient subsequently developed an empyema which necessitated a rib resection and drainage. In December, 1941, the patient died from cardiac failure. Autopsy demonstrated the remnants of the tumor mass which had undergone central necrosis.

Three myxosarcomas all responded well to the combined therapy. Two melanosarcomas gave no demonstrable evidence of any improvement whatsoever while a third melanosarcoma of the left foot with metastatic lesions along the entire lower extremity did show a decrease in the size of the inguinal mass. This case, however, died of metastatic lesions.

A patient with retroperitoneal metastases from a seminoma of the testicle has shown complete clinical control during the past ten months. He had been operated upon for a testicular tumor prior to admission to the clinic. A mass as large as a football was present in the retroperitoneal space. Three combined fever and x-ray treatments were used with complete disappearance of the mass.

An advanced carcinoma of the rectum and two far advanced carcinomas of the stomach have shown no response to the combined method of treatment.

A large profusely bleeding papillary adenocarcinoma of the urinary bladder treated with fever and x-ray last June has had an almost complete disappearance of the tumor with the patient clinically well and actively engaged in heavy work. At the time of his admission he was almost exsanguinated and required transfusions prior to being subjected to therapy.

Recently (October, 1941) an advanced carcinoma of the larynx with widespread cervical metastases has been treated. The patient, a physician, had been suffering from dyspnea, hoarseness and periods of moderate cyanosis. Following biopsy confirmation of carcinoma of the larynx a tracheotomy was performed prior to beginning the combined therapy in order to avoid the possibility of a fatal laryngeal edema secondary to the x-ray therapy. The cervical masses have disappeared, hoarseness is markedly relieved and the dyspnea and cyanosis are no longer present. The tracheotomy tube was removed on completion of the combined therapeutic procedures.

SUMMARY AND CONCLUSIONS

Following the repeated suggestions of earlier investigators that fever had a destructive effect on tumor cells and that artificially induced fever associated with x-ray therapy increased this action, the authors selected a group of fifty far advanced, inoperable cases of malignancy in which these procedures might be utilized. In order to obtain the maximum possible effect of the combined methods the authors utilized x-ray therapy immediately following the use of artificially induced fever while the hyperpyrexia was present. Protective measures such as adequate fluid and salt intake before and after inducing fever were taken. Nicotinic acid was administered to reduce the x-ray reactions.

There have been no fatalities in this group directly traceable to the technics used. Thirty-nine (78 per cent) of the cases treated in this way have shown definite improvement, varying from relief of pain, decrease in size of tumor masses, cessation of hemorrhage, improved appetite and general comfort to what appears, in some instances, to be complete clinical relief. Eleven (22 per cent) of the cases treated have shown no demonstrable improvement.

In those cases showing favorable reactions the authors have been impressed with the fact that the combined fever and x-ray technic seemed to produce results definitely superior to those obtainable through the medium of radiation alone. Our findings are in accord with those of Warren and his associates in regard to the value of fever therapy in the treatment of malignancy. We are not yet able to interpret just what changes resulting from artificially induced fever render the tumor cells more susceptible to x-ray therapy.

The time factor is too limited at present to indicate whether combined fever and x-ray therapy will serve as other than a palliative procedure. Many years of careful follow up studies on large groups of patients will be required before the possibility of cure can be determined. The results obtained in this relatively small group of patients, however, seem entirely to justify the use of such measures in attempting to relieve far advanced and inoperable cases of malignancy. Sufficient physiologic and clinical evidence is now available to stimulate further investigations in this field. It is within the realm of possibility that combined fever and x-ray therapy might serve as a more valuable adjunct to surgery than x-ray alone in those cases where postoperative radiation is indicated.

It is the sincere hope of the authors that other groups will carry out similar studies so that the potentialities of combining fever with x-ray therapy in malignancy may be more clearly evaluated.

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DIAGNOSIS, TREATMENT AND PROGNOSIS OF CARCINOMA OF BUCCAL MUCOSA*

By LOUIS H. JORSTAD, M.D.
St. Louis, Missouri

Carcinoma of the buccal mucosa is included in that group of malignancies for which we have particularly emphasized that much can be accomplished by prophylactic efforts directed at the public, medical, and dental professions. Some progress has been made when one compares the cases of today with those of ten or twenty years ago. However, it is discouraging from this standpoint to note that at the Barnard Hospital clinic, of seventeen cases admitted in 1939, eleven were clinically advanced. In 1940, of twenty-one cases admitted, thirteen were advanced, and of fifteen in 1938, six were advanced. Expressing it in another way, 64 per cent, 61 per cent, and 40 per cent, respectively, of the cases admitted during these years, presented gross extension of carcinoma beyond the boundaries of the buccal mucosa. This is a rather closely confined and strictly demarcated area, but any change on its surface is easily felt by the tongue or finger and most of its surface is easily seen by inspection.

The first changes from normal mucosa to malignancy are roughness, loss of smoothness and elasticity, fissuring and ulceration with smarting or bleeding. These symptoms persist and in the majority of cases progress slowly. Inattention to these signs and symptoms on the part of the patient is particularly significant when one attempts to elicit accurate information as to the time of their origin.

Carcinoma of the buccal mucosa is predominantly a disease of males, our series running six to one. Other authors have reported nine, eight, or ten cases in men to one in women. Richards[1] reports a series of 55 cases as ten to one. The average age of various groups reported is 62 to 65 years. This compares with this group average of 64.5 years, the youngest being 35 and the oldest 83 years of age.

Leukoplakia, that greyish white, lusterless slightly thickened transformation of the mucosa, is found associated with carcinoma in 6 per cent of these cases. Carcinoma, associated with leukoplakia, is usually of lower grade but, in our experience, is more prone to recur. In some cases malignancy has occurred following consequent areas of leukoplakia over a period of twenty years; the neoplastic areas arising every six months or at so long an interval as four years.

In the relatively few cases autopsied none had blood-borne metastases in distant tissues that did not at some time during the clinical course of the disease have cervical lymph node involvement. Braund and Martin,[2] in a postmortem study of 284 patients with primary cancer in the upper respiratory and alimentary tract, found that 23.3 per cent of these patients had blood-borne dissemination. The greater percentage of dissemination was in those who died from carcinoma of the buccal mucosa.

Of the 70 cases in a four-year group, 27, or 38 per cent, had metastasis in the submaxillary lymph nodes upon admission or during the course of observation. Richards says that 50 to 60 per cent of buccal carcinoma never metas-

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*From the Barnard Free Skin and Cancer Hospital, St. Louis, Missouri.

tasize. Thirty-six per cent of his cases were in the advanced group, as compared to 55 per cent in this series. However, it is significant that in general it can be stated that metastasis is late and is usually limited to the submaxillary group of lymph nodes and that many of these patients die from the primary lesion without evident regional or systemic metastasis.

As to treatment, both of the primary buccal carcinoma and the regional metastatic zone (the submaxillary and submental lymph-bearing area), the views as expressed in Pack and Livingston's recent volume, "Treatment of Cancer and Allied Diseases," is significant. Richards, in his chapter on "Radiation Therapy of Carcinoma of the Buccal Mucosa," says: "There is no justification for bad results of the past." He uses, mainly, a radiation technic embracing x-ray, surface radium, radium cells, and radon in various combinations intra-orally and to the metastatic zone. Polya[3] in the following chapter of this volume says: "Operation is the treatment of choice in every form of buccal cancer."

I must agree with the editorial note following these two chapters that indications for surgery and for radiation therapy of any cancer are seldom so absolute that one method can be adopted with the exclusion of the other. However, surgery, in my experience, plays the major role in effective treatment of buccal cancer.

Aside from the transitional cell forms and lympho-epithelioma, both of which types are markedly anaplastic, the regional metastases are most resistant to radiation. In the adult types of squamous carcinoma, which then comprise the majority of metastases from buccal carcinoma, resection of the submaxillary and submental lymph-bearing tissue is the treatment of choice.

Many advances have been made in the treatment of cancer during the past fifteen years. Improvement in surgical technic and anesthesia, increasing voltages and refinement of technic in x-radiation therapy, increased flexibility in radium technic and more accurate measurement of these radiant energies are some of these advances. We are better able to deliver to the cancer a lethal dose of radiant energy without destroying the reparative processes in the surrounding tissue. Thus, in the treatment of cancer of the oral mucosa, we still have our advocates of surface radium with the radium mold, radium cells, radon, high and supervoltage x-ray therapy, either for the primary lesion or metastasis or both.

We have used these methods and combinations of them at the Barnard Free Skin and Cancer Hospital. From a study of our results, not only from the standpoint of the five-year period of freedom from recurrence, but from the standpoint of morbidity and functional results as well, I am convinced of certain factors, particularly as applied to treatment of this disease.

Routine submaxillary dissection is unjustified; the dissection becomes essential and is the procedure of choice only when the regional lymph nodes are enlarged and there is no other cause apparent for this enlargement but the particular carcinoma of the buccal mucosa. Fixed or ulcerative metastatic masses are usually inoperable except as palliative measures. Interstitial radium and x-radiation alone or in combination usually result in regression but not cure and are useful as palliative procedures in selected cases only. Radiation is also indicated in the anaplastic metastases.

When recognized at an early stage primary carcinoma of the buccal mucosa seldom recurs following excision. These are lesions up to 1.5 cm. in diameter, confined to the mucosa in thickness, and do not extend posteriorly to the pterygoid area. There is no lymph node involvement. I prefer cautery or diathermic excision with 1 cm. margin of normal tissue in these cases. The extent of the defect following excision is such that knife excision with stent graft is seldom preferred or necessary.

In the next, or moderately early, group where the lesion is confined to the buccal mucosa and the submaxillary lymph nodes are freely movable, if enlarged, our five-year curability rate is 64 per cent. In this group, suprahyoid dissection was done in 42 per cent of cases and of these 66 per cent showed histologic squamous celled carcinoma in the submaxillary lymph nodes. Fifty per cent of these are free of recurrence in the primary or metastatic zone for a minimum period of five years. As for the primary lesion, full thickness excision of cheek with delayed repair or delayed stent graft into a widely excised or destroyed area of mucosa is a more common procedure.

The advanced group offers a less favorable prognosis. The regional lymph nodes are definitely hard and enlarged, but are movable. From the clinical standpoint they have not extended beyond the gross confines of the submaxillary or submental area. The primary lesion may involve the entire buccal cavity, but has not extended beyond the alveolar periosteum of the mandible or maxilla of the involved side. The

pterygoid or tonsillar tissues may be grossly invaded but the upper deep jugular lymph node chain is not involved. Our five-year curability rate is 22 per cent in this group. These cases require full thickness excision of the cheek, removing the involved area with at least 1 cm. margin or normal non-indurated tissue. Knife, cauterodyne, or actual cautery may be used. If periosteum is involved, removal of it with cautery and baking the underlying cortex of bone with cautery and soldering iron is done. Selected cases with mandibular cortex involvement requiring resection of the mandible are included in this group also. Radon seeds, radium cells, or x-radiation are supplemented in the pterygoid area if induration is present. One year of freedom from recurrence must elapse before reconstructive procedures are carried out, unless in selected cases the interference with food intake is too marked to wait this period.

In the last, or far advanced, group the neoplasm has extended beyond the buccal mucosa. The mandible and floor of mouth, the maxilla, palate and antrum, the pharynx and tongue may be invaded in varying degree. Full thickness involvement of both cheeks with bilateral fixed submaxillary metastatic masses are other examples in this group. In carcinoma of the buccal mucosa it is more usual to see this extensive primary lesion without considerable metastatic involvement than to see a clearly operable primary involvement with extensive metastasis, such as we see in other localized areas of the head. We have not arrested the disease for any appreciable period of time in this group. Radium and x-radiation alone and in combination may cause remarkable regressions of the primary lesions. In the metastatic zone, however, the results from x-radiation and interstitial radium have not been particularly brilliant, even from the standpoint of alleviation of pain or discomfort.[4,5] This is not to be wondered at when we consider that in the majority of cases buccal carcinoma grows slowly, metastasizes late, and is of low grade (well differentiated) histologically. Anaplastic or undifferentiated carcinoma of the buccal mucosa occurred only three times in this entire group.

E. L. Keyes[6] has reviewed the pathologic diagnoses of the cases at Barnard Hospital from 1904 to 1941. Lesions of the mouth, including the lips, with biopsy or operative specimen totaled 2,077 cases during this period. Fifteen hundred and sixty-one of these were cancer and of these all except ten, or a total of 1,523, were squamous-celled carcinoma. Placing leukoplakia in the group of degenerative lesions, there were 62 cases in a total of 150. These, of course, are leukoplakias which were suspicious enough of malignancy to warrant biopsy or excision. Twenty-seven of these leukoplakias were of the buccal mucosa. One hundred and eighty benign neoplasms and 186 inflammatory lesions comprise the total of 2,077 cases.

Three hundred and eighty-five cases have been recorded as carcinoma of the buccal mucosa since 1904. Of these, 288 cases have received treatment and were squamous-celled carcinoma of buccal origin so far as could be determined from the clinical description recorded.

In our series, then, leukoplakia was recognized in 10 per cent of cases and noted to occur with carcinoma in 6 per cent of cases. During a four-year period in which the Kahn reaction was determined routinely, less than 5 per cent were positive. This certainly is not in agreement with the quite often stated "frequent association" of a positive Wassermann reaction in all varieties of oral cancer. Relationships stated have been 15 to 30 per cent of patients with buccal cancer to that of 50 per cent with lingual cancer.

Keyes, in the textbook "Cancer of the Face and Mouth," by Blair, Moore, and Byars, compiled five-year follow-up statistics of some of the cancer cases of the late Ellis Fischel. He grouped with lesions of the buccal mucosa those of the alveolar process, palate, and velum. From 1913 to 1935 a total of 116 cases were seen. Those with local excision by knife, cautery, or diathermy gave a survival rate of 34.6 per cent. In a group of 15 patients where this was supplemented by unilateral neck dissection the survival rate was 53.3 per cent.

CONCLUSIONS

Squamous-celled carcinoma comprises the greater number of malignant neoplasms of the buccal mucosa.

Over one-half of the cases in this group were advanced clinically.

Excision of the malignant tissue with adequate margin by knife, cautery, or diathermy is the procedure of choice in eradicating the primary neoplasm.

Resection of the regional lymph bearing tissue is indicated when the lymph nodes are palpable

if the only apparent cause for this palpability is found to be a probable metastasis.

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Beaumont Medical Building

VIRUS PNEUMONIA*

By HUGO T. ENGELHARDT, M.D.*
and
CARL J. W. WILEN, M.D.*
New Orleans, Louisiana

Since 1934,[1] there have been numerous reports from various sources in this country and abroad, describing sporadic cases and small epidemics of a respiratory infection characterized as a primary bronchopneumonia of young adults.

Reports from the literature and our own observations indicate that this respiratory syndrome is clinically distinct from the usual types of lobar pneumonia and bronchopneumonia. Various descriptive terms have been used to describe this syndrome, depending upon the author's interpretation of the significant clinical and laboratory findings associated with the disease. For example, acute interstitial pneumonitis, atypical bronchopneumonia,[3] virus pneumonia,[4] acute influenza pneumonitis,[5] acute diffuse bronchiolitis,[6] bronchopneumonia of unknown etiology,[7] are some of the descriptive terms used.

This acutely infectious, mildly contagious disease of the respiratory tract is characterized by an incubation period of about two to three weeks. The onset is usually gradual, and is associated with a progressive rise in fever, moderate malaise, pharyngitis, and a paroxysmal nonproductive cough. Typically there is a paucity of pulmonary physical signs. The leukocyte count is within normal limits early in the disease, but later becomes definitely elevated. In mild cases the febrile course is terminated by the fourth or fifth day, whereas in the severe cases there is a secondary rise in fever at about this time which may or may not be associated with a spread of the disease.

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*From the Department of Medicine, School of Medicine, Tulane University of Louisiana, and the Charity Hospital of Louisiana.

ETIOLOGY AND PATHOLOGY

The etiology is as yet not definitely established, but there is gradually being accumulated data which would indicate that these cases of atypical pneumonia are due to a virus.

In 1938, Francis and McGill[8] were able to isolate an unidentified virus which produced acute pneumonitis in experimental animals. Armstrong, Oliphant and Haas collaborated in the study of Hornibrook and Nelson's cases[9] and used mice, ferrets, monkeys, and chickens, but were unable to demonstrate the viruses of lymphocytic choriomeningitis, influenza, psittacosis, or any other viruses to which these animals were susceptible.

Wier and Horsfall,[10] in 1940, succeeded in producing pneumonia in a mongoose, using a virus recovered from patients with acute pneumonitis. In the following year, Eaton, Beck and Pearson[11] were able to isolate a virus which possessed similar characteristics to that described by Francis and McGill.[8] These investigators, and others,[12 13] have commented upon the relationship of this virus to that of psittacosis.

The clinical features of this disease which suggest the possibility that a virus is the causal agent are: its contagiousness, long incubation period, the absence of any predominating bacterial flora in the sputum, the absence of specific agglutinations for any known pathogenic bacteria, and the predominance of mononuclear cells in the pulmonary exudates of the autopsy cases.

A significant association of virus pneumonia with the rickettsial diseases, Australian Q fever, and Montana tick virus has been demonstrated by Dyer, Topping and Bengtson.[14] These workers isolated identical strains of Rickettsiae from the blood of three of Hornibrook and Nelson's cases.[9] These cases occurred in an institutional outbreak of pneumonitis and showed the clinical characteristics already described. By means of cross immunity tests and protection tests the organisms were identified as the Rickettsiae of Q fever. The biologic similarity and apparent identity of the Rickettsiae obtained from Mon-

tana tick virus and Australian Q fever has been demonstrated by Dyer,[15] and by Burnet and Freeman.[16] The clinical similarity between Australian Q fever and "virus pneumonia" has been mentioned by several authors; however, respiratory symptoms are mild or absent in the former disease. The single accidental human infection thus far reported with Montana tick virus[18] showed a mild febrile course without distinctive symptomatology. Unfortunately, no chest x-ray studies were made on the reported cases of Australian Q fever and the one human case due to Montana tick virus. It is significant to note that no relationship of these organisms to the Rickettsiae obtained from Rocky Mountain spotted fever, typhus (endemic or epidemic) has been demonstrated.

PATHOLOGY

Inasmuch as fatalities in this disease are relatively rare, there having been only six reported autopsy cases, a typical pathologic picture cannot be postulated. However, certain characteristic changes were found in the lungs of the postmortem cases which were sufficiently similar to suggest a common etiologic basis. Characteristically, the lungs show moderate congestion and edema, with confluent areas of firm granular consolidation. The tracheobronchial tree is diffusely reddened and the mucosa is congested and thickened. Microscopically, sections from the areas of consolidation show that the bronchioles are occluded by an exudate containing fibrin, lymphocytes, plasma cells and large mononuclear cells. The alveoli contain a similar exudate and red blood cells are fairly numerous in scattered alveoli. Polymorphonuclear cells are few throughout. Relatively few gram positive or gram negative cocci were observed. The alveolar septa are thickened with an accumulation of lymphoid, plasma and mononuclear cells. Lymphocytic and plasma cell infiltration is also observed in the peribronchial, perivascular and pleural connective tissue. Kneeland and Smetana[19] and also Longcope[7] described arterial necroses. Perrin[20] was able to reproduce essentially the same findings in rhesus monkeys by injecting the lungs of the animals with strains of Q fever viruses. The general pathologic characteristics[21] are essentially similar to the pneumonias occurring in other virus diseases such as epidemic influenza, measles, psittacosis and variola, before secondary infection supervenes.

CLINICAL PICTURE

The disease is characterized by a gradual onset which makes its appearance with the symptoms of malaise, pharyngitis, and a gradual rise of fever. These prodromal symptoms are present for three or four days before the fastigium is reached. In the majority of cases the disease follows a mild course with fever from 102 to 103°, lasting for a few days, and during this period the respiratory symptoms become manifest. The patient complains of pains in the chest, non-productive and frequently paroxysmal cough and mild prostration. The fever terminates by lysis in three or four days. Indefinite physical signs of pulmonary inflammation usually make their appearance in a few days after the onset of fever. These findings may consist of slight impairment of resonance in a limited area on one side, along with repressed breath sounds and transitory moist rales over the same area. In our experience the physical signs usually persist in varying intensity for eight to ten days after the temperature has returned to normal. With the appearance of the physical signs a roentgenogram of the chest is made, which is usually reported as showing signs of early pneumonia or pneumonitis.

Characteristically the x-ray lesions are of a soft, infiltrative type, single or multiple, occurring about the hilus and extending into the lower lung fields. The lesions tend to be patchy rather than of the uniform density of lobar pneumonia. Ordinarily resolution is complete in ten to fourteen days with only occasional strands persisting to indicate the size of the original involvement.

The leukocyte count is normal or slightly elevated in mild cases and seldom exceeds 12,000. The differential count remains essentially within normal limits. Occasionally during convalescence the leukocyte count may show an increase to 15 or 20,000. This may or may not be associated with evidence of the disease.

The degree of prostration is out of proportion to the physical signs and roentgenologic findings, and persists long after other evidence of the disease has disappeared. In seven to 14 days the patient usually feels well enough to be up and about.

There is evidence that a definitely severe form of the disease exists, and in the deaths so far reported, the patients have been over 35, and have had a chronic pre-existing disease process. In the severe types, although the onset is similar, the fever reaches a higher level and shows a secondary rise on the third or fourth day. This is associated with a spread of the pulmonary involvement, and the accompanying toxemia may last for weeks and even months.

The complications associated with the coccal diseases such as empyema, effusions, bronchiectasis, chronic suppurative pulmonary disease, septic joints and meningitis, have not, to our knowledge, been reported as complicating virus pneumonia.

It is impossible to say at this time that virus pneumonia is a new entity with an increasing incidence, or whether the many reports in the past few years indicate a greater awareness of the disease. It is anticipated that reports from large military cantonments will provide valuable information in regard to the epidemiology of the disease.

Our experience, like that of other observers, is that there seems to be an increasing incidence of sporadic cases of primary bronchopneumonia of unknown etiology. These patients present findings which conform to the criteria already discussed. For example, we present in *Table 1* a summary of the findings of nine successive cases of primary bronchopneumonia requiring hospitalization and occurring among the 260 members of the House Staff of Charity Hospital in the spring and summer of 1941. In approximately one-third of the cases a history of definite contact could be established. However, this was not true of the remainder.

Case	Fever Duration Days	Max. Temp.	W.B.C.	Type of Onset	Pneumonitis
1	6	103.2	10,000	Cough	R.M.L.
2	5	103	4,900	Cough Malaise	L.M.L. & R.B.
3	5	101.2	8,850	Cough	Phrenic Angles
4	6	104.4	9,300	Sudden Chill	L.L.L.
5	5	101.2	8,500	Cough	R.B.
6	8	104	11,700	Cough, Chills	R.L.L.
7	22	102.4	11,000	Cough	R.M.L. & R.B.
8	6	99.8	9,300	Cough	R.M.L.
9	20	102.4	5,750	Cough	R.M.L.

Table 1*

*In all nine patients the fever fell by lysis. The respiratory symptoms consisted of a cough and tenacious sputum in each instance. Sulfathiazole was given to all except the first patient who received sulfapyridine. No beneficial results could be ascribed to these drugs. There were no complications following the disease in any of the nine patients.

SUMMARY AND CONCLUSION

A brief discussion of the present concept of "virus" pneumonia, and an outline summary of nine cases which seem to fall into this category has been presented.

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VIRUS PNEUMONIA*

By SAMUEL S. RIVEN, M.D.C.M.
Nashville, Tennessee
and
EDWARD A. STERN, M.D.
Rochester, New York

So-called virus pneumonia has attracted considerable attention during the past few years. Because of the interest that has arisen in this subject, we are prompted to review briefly the literature concerning it and to report cases that have been seen at the Vanderbilt University Hospital. This syndrome has been variously designated and many authors[1 2 3 4 5 6 7 8 9 10 11] have added a new name. Included in the nomenclature that has so far accumulated are bronchopneumonia of unknown etiology, variety X; virus pneumonia, atypical bronchopneumonia, disseminated focal pneumonia, benign bronchopulmonary inflammation, acute interstitial pneumonitis, acute infection of the respiratory tract with atypical pneumonia, atypical pneumonia with leukopenia. We prefer to use the term, virus pneumonia, until such time as the etiologic agent shall be more definitely established, with full realization that this syndrome differs from other virus infections which have been ascribed to specific agents such as the virus of chicken pox, whooping cough, measles and psittacosis.

The syndrome of virus pneumonia has been known for a number of years, but it was not until 1938 that Reiman[5] focused attention on this disease as a separate entity and not as a complication or variant of some other disease, such as influenza. Since that time there have been numerous papers dealing with the clinical aspects of this disease and several dealing with the etiologic agent concerned. It is highly probable that within the next few years many more cases will be observed and that facts concerning the etiology and epidemiology will be clarified. It would seem probable that this disease occurs now with much greater frequency than in the past and that failure to call attention to it was due both to its relative rarity and its nondifferentiation from other pneumonias.

The clinical picture, as described, is variable both in severity and in symptomatology. It is, however, distinct enough to be recognized as a clinical entity in most cases. The incubation period has been variously estimated through study of contacts, to be from five to as long as twenty-five days, the usual incubation period being probably between two and three weeks. The onset of the disease is usually gradual, with weakness, malaise, headache, and generalized aching. Coryza or pharyngitis may or may not be present. In some cases the onset may be sudden but rarely with frank chill, high fever, or pleurisy. However, chilly sensations and aching in the chest are not infrequent complaints. A hacking cough is usually evident from twenty-four to forty-eight hours after the onset, although this may be absent or inconspicuous so that attention may not be directed toward the lungs. Fever is variable, ranging from 102 to 105° F. Sweating is frequent. Some individuals have nausea and abdominal discomfort. Cough is apt to be hacking, persistent and very troublesome. The degree of prostration is variable. Physical findings are frequently remarkable because of their sparsity. Evidence of a rhinitis and pharyngitis may or may not be present. Signs in the chest are usually limited to inconspicuous changes in percussion note and breath sounds with variable numbers of medium and fine rales. The examination of the chest may be entirely negative, and in most cases the evidence of pulmonary pathology obtained by roentgen ray is greatly out of proportion to the evidence obtained by physical examination. The patients frequently do not appear very ill. The temperature is usually of the remittent type and often biphasic. The pulse is usually relatively slow, and the respirations are increased only in severe cases.

Roentgen ray examination of the chest usually shows patchy, spotty shadows of varying density, generally extending from the hilus out toward the periphery of the lung fields. These may appear as an irregular mottling, may be confluent, and on serial examination may appear to be of a migratory character. There may be little more than increased hilar density, or there may be a diffuse involvement of most of the lung fields. The lower lobes are involved more frequently than the upper. Roentgen ray evidence of pulmonary involvement may be present within twenty-four to thirty-six hours after the onset of symptoms. The estimation of the white blood count has varied somewhat in different series of cases. On admission, this has ranged from a moderate leukopenia to a slight leukocytosis. There is frequently a moderate

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*From the Vanderbilt University School of Medicine, Nashville, Tennessee.

and, occasionally, a marked leukocytosis late in the course of the disease. The differential count is not remarkable. The sputum is usually scant, sometimes blood streaked, but rarely rusty. The routine sputum cultures frequently show nonpathogenic mouth organisms. A few show pneumococci of higher types but not in large numbers. These are not thought to be etiologically related to the disease. Blood cultures, specific agglutinations, and other laboratory studies have yielded negative results.

A tremendous variation exists in the severity of cases reported by the same and by different individuals. Longcope[6] says that both mild and severe cases have been traced from the same source. It seems evident that the difference in severity of the disease is an indication of its variable nature rather than a difference in etiologic organism, although it is not improbable that variant strains of the same causative organism may here play an important part, as well as the reaction of the host. Some of the cases that have been reported resemble mild grippe with the temperature normal within thirty-six to forty-eight hours after the onset of the illness. Other cases have been severely ill, the disease being marked by long-continued fever, marked toxicity and prostration, rapid pulse, dyspnea, cyanosis, asthenia, and a tendency to relapse. Some cases suggest typhoid fever. The usual duration of the disease is from one to three weeks. There is apparently no correlation between the severity of the course and the signs elicited. The pulmonary lesions appear to clear by lysis. Roentgen ray shadows are often in evidence one week or more after the subsidence of the fever.

A striking feature of the disease is the rarity of complications by secondary bacterial invaders. Empyema, lung abscess, otitis media, and other complications are unusual. Many authors have been impressed with the contrast between virus pneumonia and pneumococcal pneumonia. The principal points of difference are the gradual onset, absence of chest pain and friction rub, absence of chill, character of the sputum, remittent type of fever, absence of herpes febrilis, and abdominal distention, peculiar roentgen ray shadows, scarcity of physical signs over the lung fields, relatively low white blood count and a conspicuous lack of complications.

The treatment of the disease is supportive and symptomatic. It is generally agreed that drugs of the sulfa group that have been effective in bacterial pneumonias are ineffective. The prognosis of the disease is good. As far as we are aware there have been only three fatalities reported. The seasonal incidence of this disease does not correspond to that of upper respiratory infections or to that of lobar pneumonia. The series that have been reported show either an even distribution throughout the year or a tendency for a peak to occur in the fall months. The disease appears to be definitely contagious but not highly so. A number of cases have occurred among the families of patients and among nurses and physicians in charge of patients. The disease appears most commonly in young adults. There is no apparent sex predilection.

We know of only three reported cases in which postmortem examination has been done. Kneeland and Smetana[9] reported a single case in which there was an extensive confluent bronchopneumonia. The earliest stage of the pulmonary lesion was thought to be a hemorrhagic exudate which was later replaced by an exudate, composed chiefly of mononuclear cells with a distinct tendency to organize, and marked thickening of the alveolar septa in the involved areas. There was an extensive purulent bronchitis from which type X pneumococcus was isolated. This organism was not thought to be related to the pneumonitis as no bacteria were found in the alveolar exudate. It was noted that the medium sized branches of the pulmonary arteries showed necrosis and infiltration, which the observers felt were compatible with the lesions of periarteritis nodosum. These lesions were not found elsewhere in the body. It is of interest that there were several patients reported by Kneeland and Smetana which showed bizarre and widespread manifestations, and which clinically suggested a diffuse vascular disease. Two fatal cases, there were examined postmortem, were reported by Dr. Longcope.[6] Both of these were complicated by chronic rheumatic heart disease. Both showed an extensive bronchopneumonia and considerable pulmonary edema. In one case it was noted that the exudate was composed almost entirely of mononuclear cells and that there was a conspicuous absence of polymorphonuclear cells except in the bronchial exudate. There was squamous metaplasia of the bronchial epithelium. The notes on the other case are incomplete and are not clear as to the character of the exudate; but it was noted that the smaller radicles of the pulmonary artery showed necrosis and cellular infiltration of their walls. In none of the fatal cases have inclusion bodies been reported.

Considerable speculation has arisen concerning the etiology of these virus pneumonias. A virus etiology has been suggested on clinical grounds, particularly the long incubation period, the contagiousness, the monocytic infiltration in the lungs, the relatively low white blood cell count and the unsuccessful attempts to incriminate various bacteria. From two patients reported by Reiman[5] in 1938, a filterable infectious agent was obtained by Stokes, Kenny and Shaw[12] by incubating throat washings intranasally into ferrets and then intranasally and intracerebrally into mice and guinea pigs. Many of the animals developed a monocytic pneumonia. This filterable infectious agent was lost after several transfers, and no conclusive observations were made. Many other investigators have attempted to isolate a virus from patients with this disease, using a large variety of laboratory animals, but with negative results.

In November, 1940, Weir and Horsfall[13] reported their experimental work with a virus causing pneumonia in the mongoose. They obtained throat washings and blood serum from four patients with virus pneumonia from widely scattered areas in New York State. The throat washings were inoculated intranasally into mongooses, and ground-up lung suspension of the killed animals were inoculated serially into other mongooses. From each of the four throat washings they demonstrated the presence of a filterable infectious agent which caused a variable but characteristic pulmonary consolidation in a large percentage of their inoculated animals. The resultant consolidation was composed almost entirely of mononuclear cells. Cultures for bacteria from the consolidated areas were consistently negative. They established the normal infectivity of the virus for the mongoose by demonstrating that a high percentage of normal animals developed typical pulmonary lesions when placed in contact with inoculated animals. They were unable to infect a large number of other laboratory animals with this virus nor could they infect the mongoose with several viruses, including the virus of influenza. They demonstrated the presence of specific neutralization of the virus by convalescent mongoose serum and by the sera of six patients convalescing from the disease. When suspensions of the virus were mixed with convalescent sera and inoculated into normal mongooses, none of the animals developed a characteristic mononuclear consolidation. This protection was not afforded when normal human serum or normal mongoose serum was used. Weir and Horsfall conclude their paper with the statement that "the evidence so far obtained suggests that this virus is the cause of acute pneumonitis in human beings," and that "it differs from other viruses known to cause infections in the respiratory tract in man."

In October, 1940, Hornibrook and Nelson[14] described an epidemic of pneumonitis which occurred at the National Institute of Health in Washington, D. C. Their report concerns fifteen cases of pneumonitis which occurred among 153 employees of a single building in which work had been in progress for several years with the rickettsial organism of Australian Q fever. The clinical features of the cases reported by the authors are similar, if not identical, to those that have been described as virus pneumonia. Dyer, Topping and Bengtson[15] report the isolation and identification of the organism that was found to be the causative agent. This organism was isolated from the blood of two patients and the spleen of one fatal case by intraperitoneal inoculation to guinea pigs and was found to be identical culturally and immunologically with the rickettsia of Australian Q fever and distinct from other rickettsial organisms. Specific agglutinations were exhibited in the serum of most of the convalescent cases. In January, 1941, Lillie, Perrin and Armstrong[16] reported the pathologic findings of the one fatal case that occurred in this epidemic and the pathologic findings of eight rhesus monkeys that were infected with the causative rickettsial organism. In all cases a nodular, and in some a confluent consolidation, was present. The exudate consisted principally of fibrin and mononuclear cells with a marked tendency to organize. From these papers, it is evident that the outbreak of pneumonitis which occurred at the National Institute of Health was in all probability caused by the rickettsia of Australian Q fever, and that this organism may give rise to a syndrome which is similar and possibly identical with virus pneumonia.

In order to give some idea of the manner in which this disease progresses, the details of six cases seen in Vanderbilt Hospital during the past twelve months will be outlined. The first two represent severe attacks of the disease; the third a moderately severe attack, while the last three were comparatively mild.

Case 1.—E. F., a woman, aged thirty-eight, was admitted to Vanderbilt Hospital on August 29, 1941, complaining of cough, aching all over, headache and chilly sensation. The family history was unimportant and except for measles, mumps, and frequent sore throats

as a child, she had been healthy. Three days before admission there was acute onset of headache, pain in the muscles and joints and chilly sensation. Each chill was followed by a fever of 103° to 104° F. After three days in bed, the prostration became marked, generalized aching, severe headache continued and she was admitted to the hospital. The cough had become productive of small amounts of purulent sputum. On admission she appeared acutely ill, somewhat prostrated with a harassing cough. There was neither dyspnea nor cyanosis. The temperature was 104.6° F. and the pulse was 100. The skin was hot and dry; there was no general enlargement of the lymph nodes; some palpable lymph nodes in the neck; tenderness over the whole body, head and neck. There was no rigidity of the neck. The pharynx was slightly injected. The heart showed no abnormality except for a soft systolic murmur at the apex and the rate was considered slow for the marked fever (104° F.). The lungs were clear to percussion and auscultation except for scattered rales. The abdomen was soft with some tenderness to pressure. The liver and spleen were not palpable. Leukocytes were 6,200. The urine was not abnormal. A blood culture showed no growth of bacteria. Culture from the throat was negative. Roentgen ray examination on the eighth day of the disease showed a diffuse pneumonic process at the right base. Numerous examinations of the sputum showed no tubercle bacilli; no typable pneumococci and no other abnormal flora. A physical examination made on September 6, 1941, revealed that the left lung was clear, but at the right base posteriorly there was dullness, bronchovesicular respiration and rales. On August 31, 1941, the leukocytes were 5.000. On September 9, 1941, another roentgen ray examination of the chest showed that the pneumonic process in the right base had spread throughout this area with beginning involvement of the left and it now appeared to be a diffuse bronchopneumonia. The patient was given sulfathiazole on admission and the blood level varied from 4.8 to 8.0 milligrams per 100 c. c., but without any effect in the course of the disease. After the third day the drug was discontinued. On September 15, 1941, the fever began to subside and with the fall in temperature the symptoms receded. Great numbers of rales appeared over the right chest with the leukocyte count reaching 14,800 on September 14, 1941. Convalescence was slow, but physical and roentgen ray examination of the lungs was normal on September 9, 1941, four weeks after the onset of the illness. Within two weeks of this patient's illness, two of her friends who were at a summer camp at the onset of her illness suffered a similar attack of bronchopneumonia.

Case 2.—W. R. H., a white soldier, aged twenty-two, was admitted to Vanderbilt Hospital on August 24, 1941, complaining of sore throat, weakness, malaise, difficulty in breathing and headache. The past history was unimportant. He had been inoculated for typhoid fever, receiving three injections, three weeks previously. He did not recall having been bitten by mosquitoes. No member of his company had a similar illness. For two days he had acute headache, generalized aching, and intermittent cough and hoarseness. The headaches were severe and frontal in location. On admission thirty-six hours after onset, he appeared acutely ill, intensely prostrated with a harassing but unproductive cough, accompaned by pain in the anterior chest. The temperature was 103° F., the pulse rate was 100, respiratory rate 20 and the blood pressure 120 systolic and 80 diastolic. The skin was warm, moist and elastic with no petechiae. Examination of the lungs revealed resonance to percussion over both lung areas. The bases descended well. Tactile fremitus was normal throughout. Breath sounds were vesicular except at the left base posteriorly where they were slightly diminished. Over this area there were a few moist rales, which persisted after coughing and a few post-tussive rales were also heard in the right axilla. The remainder of the physical examination was negative. Leukocytes numbered 7,000 per cubic millimeter with 80 per cent polymorphonuclear neutrophils. The urine was negative. A blood culture showed no growth of bacteria. Culture from the throat showed a few hemolytic streptococci. Sputum cultures showed no pathogens. The chest was examined with roentgen rays on four different occasions. The initial film on August 25, 1941, showed irregular density over the left lower lobe and marked increase in bronchovascular shadows throughout. A second film on August 27, 1941, showed evidence of pneumonia at the left base and bronchitis on the right side. A third roentgenogram on August 29, 1941, showed an atypical pneumonic process involving both lower lobes, mostly the left. By September 2, 1941, the last film showed clearing of both sides. The course of the illness was as follows: the temperature rose to 204.4° F.; the severe headaches persisted and on the second day he developed a moderate stiff neck, but lumbar puncture showed a normal spinal fluid. Chills followed by febrile rise were present. On the fourth hospital day the cough became productive of small amounts of mucoid sputum. The physical examination revealed dullness, distant breath sounds and whispered pectoriloquy over the left lung but no rales. On the fifth day there were scattered rales at the left apex and right base posteriorly. On the sixth day the physical signs were consistent with massive consolidation over the left upper lobe and right lung base. The temperature subsided gradually and became normal on the ninth hospital day. This was followed by a rise to 100° F. for two days. Recovery was uncomplicated and he was able to leave the hospital on the fourteenth day.

Case 3.—H. McE., white man, aged thirty-two, was admitted to Vanderbilt Hospital on January 23, 1942, complaining of fever and cough. He had a previous history of sinusitis and in 1930 had a sinus operation with drainage of both antra. In 1939, he had a spontaneous pneumothorax and he remained in the hospital for two months, making a complete recovery and was in excellent health up to the present illness. His illness began three weeks previously with onset of general malaise and fever. The fever was around 100° F. during most of the day, but in the late afternoon it would rise to 103° F. Two days after the onset, he developed a deep-seated productive cough, accompanied by a foul smelling tenacious sputum. He also noted some substernal oppression at times, never very marked. Three days following the onset of his illness, he also noticed a sensation of fullness in the right ear with soreness around the ear and some tinnitus in the left ear. He also said he could not hear as well out of the right ear. On admission he appeared not very acutely ill, but coughed continuously. There was neither dyspnea nor cyanosis. The temperature was 100° F., pulse 100,

and the blood pressure was 130 systolic and 70 diastolic. The pharynx was mildly injected and examination of the ears was negative. The heart showed no abnormality. The lungs were clear to percussion and auscultation except for numerous bubbling rales at the angle of the right scapula. The abdomen was soft and the spleen was not palpable. The leukocytes were 9,000. The urine was not abnormal. The examination of the sputum on five occasions was negative for typable pneumococci and other pathogenic organisms, including tubercle bacilli. Roentgen ray examination of the chest made on January 23, 1942, showed evidence of widespread pneumonia in the right lung. The pneumonia started to resolve on the eighth hospital day, four weeks after the onset. He had a secondary rise in temperature on the ninth hospital day, but this returned to normal and he made an uneventful recovery. One week after admission to the hospital, the patient's wife became ill with the same disease and she was treated for it at another hospital.

Case 4.—S. M. P., a woman, aged forty, was admitted to Vanderbilt Hospital on January 29, 1942, complaining of weakness, headache, malaise and a dry hacking cough. The past history was unimportant. Five days before admission to the hospital she developed a sore throat followed by chilly sensations. The sore throat disappeared in a few hours to be followed by extreme weakness and headache. This was accompanied by a dry hacking cough which later became productive of thick mucoid brownish sputum which at times contained specks of bright red blood. She had no definite chest pain, but had noted tightness in the midsternal region. A day after the onset of the illness, she was placed on four grams of sulfadiazine daily for three days, but this did not affect the course of the illness. On admission she appeared acutely ill and tired easily during the examination. The temperature was 101° F., pulse 100, respiratory rate 20 and the blood pressure was 110 systolic and 90 diastolic. The examination of the head, nose and throat was negative. At the base of the right lung anteriorly tactile fremitus was increased and the percussion was dull up to the tip of the right scapula. Breath sounds were slightly diminished in intensity and many fine moist rales were heard, most marked at the end of inspiration, extending little higher than the areas of dullness. The rest of the physical examination revealed negative results. Leukocytes numbered 8,000 per cubic millimeter with 65 per cent polymorphonuclear neutrophils. There was one plus albuminuria with occasional red and white blood cells in the urinary sediment. Bacteriologic examinations of the sputum and blood on numerous occasions were entirely negative. The chest was examined with roentgen ray on January 27, 1942, and showed a marked infiltration involving the right lower lobe interpreted as being due to atypical pneumonia. Subsequent roentgen examinations showed progressive clearing of this process. Within two weeks distinct clinical improvement occurred, although the temperature rose to 100° F. every evening and the leukocytes increased to 10,400 at the end of the second week. Examination of the lungs on February 3, 1942, revealed the right lung to be clear, but over the left lung there was harshness of the breath sounds and many coarse rales in the lower two-thirds of the chest. On February 11, 1942, sixteen days after admission to the hospital, examination of the chest was essentially negative and the roentgen appearance of the lungs was correspondingly improved. The prostration had almost entirely disappeared and she was able to leave the hospital.

Case 5.—D. M., a woman, aged twenty-four, was admitted to Vanderbilt Hospital on January 26, 1942, complaining of hacking cough and fever. The past history was unimportant. The onset of the illness began about two weeks before with a hacking nonproductive cough accompanied by fever. She did not feel particularly ill, but continued to cough and raise a small amount of mucoid sputum. She said she felt chilly on several occasions and the chilly sensations lasted five to ten minutes. There was also severe headache. She is an employee at the hospital and on the day of admission consulted one of the members of the staff, who discovered some vague physical signs in the chest and had a roentgen ray examination of the chest. This revealed widespread infiltration throughout the left lower lobe which had the appearance of bronchopneumonia. She was advised to enter the hospital. On admission she did not appear ill. There was neither cyanosis nor dyspnea. The temperature was 104° F., pulse 108, respiratory rate 22, the blood pressure was 112 systolic and 75 diastolic. The examination of the lungs revealed some dullness in the mid portion of the right lower lobe. In this area there were a number of fairly constant crackling rales. There was no change in the breath sounds. The rest of the examination was negative. Repeated sputum examinations were negative for tubercle bacilli or any other pathogenic organism. Mouse inoculation and sputum culture were negative. The leukocytes were 13,250 and the differential smear was negative. The general course was uneventful. On the fourth hospital day the temperature returned to normal with a secondary rise to 99° F. every afternoon for ten days. By the end of a few days she was greatly improved and she was discharged twelve days after admission perfectly well.

Case 6.—J. Z., a man, aged thirty-seven, was admitted to Vanderbilt Hospital on March 31, 1942, complaining of chilly sensations and slight hacking cough. The past history was unimportant except for the fact that he was always underweight and had had many examinations for tuberculosis which were all reported negative. The onset of the present illness began ten days previously with chilly sensations, malaise and dry, nonproductive cough. He felt chilly all during the first day but continued with his work. The following day he continued to feel chilly and he was found to have fever of 102° F. His physician gave him sulfathiazole, one gram every four hours for three days, but without benefit. He continued to have occasional chills and intermittent fever. Two days before admission to the hospital he had a severe shaking chill lasting an hour and a half followed by a temperature of 104° F. A roentgen ray examination was made on that day and revealed "unresolved pneumonia" on the right. He was again given sulfathiazole for three days, but without any results. Throughout his illness his only symptoms were chills and fever, some malaise and a rare non-productive cough. There was no history of any chest pain, dyspnea, headache or generalized aching. On examination he did not appear acutely ill. The temperature was 103.2° F., the pulse rate was 104, respiratory rate 24 and the blood pressure 118 systolic, 64 diastolic. There was neither dyspnea nor cyanosis.

There was an erythematous macular mottling of the skin of the upper chest anteriorly which was not marked. The tonsils were slightly enlarged, somewhat reddened and imbedded. Examination of the lungs revealed dullness over the mid portion of the right lung posteriorly. The breath sounds were slightly harsh over this area but no rales. The remainder of the physical examination was negative. Leukocytes numbered 7,500. The urine was negative. Sputum examinations were made on five different occasions and showed no tubercle bacilli; no typable pneumococci or other pathogenic organisms. The chest was examined with roentgen ray on March 31, 1942, and showed extreme infiltration radiating from the hilus, downward and outward into the lung field on the right which had the appearance of bronchopneumonia. On April 3, 1942, physical examination of the chest revealed dullness to percussion over the right lower lung, harsh breath sounds and a few fine rales. Roentgen ray examination showed an increase in pulmonic process in the right base. The cough now became productive, and harsh breath sounds and moist rales were readily made out at the right base posteriorly. The temperature began to subside and by the tenth hospital day was normal. He had a secondary rise of temperature on the eleventh day up to 99 and 100° F., which continued for one week. During this time the signs in the lung were readily elicited. Leukocytes rose to 12,700 at the end of the illness. On April 24, 1942, almost four weeks after the onset, the examination of the lungs was essentially negative and roentgen appearance of the lungs was correspondingly improved. Recovery was uneventful.

SUMMARY

So-called virus pneumonia is a disease that has been only recently identified and is being recognized with increasing frequency. Its clinical picture is inconstant but distinct enough to be readily recognized in most cases. It is characterized by a gradual onset, generalized symptoms of variable severity, cough, fever, inconspicuous signs over the lung fields, with frank roentgen ray evidence of pulmonary involvement, scant mucopurulent sputum from which the common pathogenic organisms cannot be isolated, a relatively low white blood count, a variable course and a relatively good prognosis. The data on the pathologic changes of this disease are sparse but would appear to indicate that the cellular infiltration is of the mononuclear type. The etiology of the disease is not entirely understood, but it would seem probable from evidence to date that the disease is caused by a filterable virus that has not been hitherto identified or that it is possibly caused by a rickettsial organism.

Several illustrative cases are reported.

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TUBERCULOSIS IN 1942*

By CHAMPNEYS H. HOLMES, M.D.
Atlanta, Georgia

As we stand now shoulder-deep in this current year, I am presenting to you an inventory, a summary, of the present status of tuberculosis, or if you will, I shall high-light the features of tuberculosis of the 1942 model. There have occurred rapid and radical changes in the general picture during the past quarter of a century, and today it is still ever-changing. No longer is it the drab, colorless, static one that many of us knew during our student days, or during our early years as erudite practitioners of medicine. The chassis has been revamped and streamlined, and many of the modalities are new and strange. It is the model 1942. Briefly and quickly, let us review it.

Today, the diagnosis of tuberculosis, except in the very occasional case presenting particular problems, can be made readily, accurately and early. We no longer depend upon the very frail support of the physical examination. Crepitant rales, broncho-vesicular breathing, increased fremitus are academic echoes rapidly being relegated to the realm of medical lore. While we have seen dethronement of the physical examination, this examination should not be ignored, since it still contributes much of value. Perfecting oneself in its performance, tends toward the encouragement of the art in the practice of medicine.

While the tuberculosis skin test tells only whether or not there is an infection by the tubercle bacillus somewhere in the body, this it does do with nicety and precision, and within

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a few to several weeks after such infection has taken place. Its value in differential diagnosis and its signal importance in contact examinations and in case findings, are obvious. The P. P. D., because it is both stable and standard, is the preparation of choice. The patch test is a satisfactory substitute in needle shy children, and in that small group in which parental opposition to an injection is encountered.

Outstanding in the diagnosis of pulmonary tuberculosis, is the x-ray examination. In fact, it may be said that no patient has been satisfactorily examined without it. This demands a properly made film and an intelligently read interpretation. A poor film not only offers little information, but usually is misleading. In very experienced hands, the fluoroscopic examination can be highly satisfactory except for the minimal and borderline cases. The ideal examination would include the use of stereoscopic films, angle exposures as indicated and fluoroscopic study. Most important in following the evolution of the disease in a given case, is the study of serial films. With the exception of faulty films, I believe the most frequent error in the x-ray examination is the sin of commission. The inexperienced are prone to read into a film what is not there. Peribronchial markings and hilus shadows receive the brunt of this offense. No one should attempt to evaluate the abnormal unless and until completely familiar with the normal.

The finding of tubercle bacilli in the sputum remains the sole diagnostic proof. Where the direct slide smear fails, the concentration method, culture or animal inoculation may be resorted to. Examination of the fasting gastric contents for tubercle bacilli, especially in children and some special groups, is being increasingly and usefully employed. One of the more recent laboratory tests is the observation of the tuberculin skin reaction in a guinea pig which has been injected with suspected material. This considerably shortens the interval that normally must lapse between the injection and the postmortem examination. The sedimentation test, while not strictly a diagnostic one, is very helpful as a gauge of the activity of a tuberculous lesion and as an index to the general trend of the course of the disease. To serve its optimum usefulness, it should be performed serially.

The bronchoscopic examination has come to play such an important role in tuberculosis, that no sanatorium is well staffed that does not include a bronchoscopist among its staff, or at least has one readily available. In latterly years a condition known as tracheobronchial tuberculosis has been recognized. The whole pathologic picture may be largely or entirely confined to the tracheobronchial tract. An asthmatic wheeze, a positive sputum and the dearth of findings in the lungs suggest its presence. The bronchoscope proves it. A bronchoscopic examination before any major thoracic surgery should be routine. Even prior to less formidable collapse procedures its employment may be entertained.

Since a carefully taken history has always been, even on the ancient models, a prominent fixture, nothing more need be said other than that it is retained on the present one. It may be interesting to add that in symptomatic tuberculosis the diagnosis can be indicated in the big majority of cases across the consultation desk.

The most glowing chapter ever written into the history of tuberculosis, and even now in the writing, is the one on collapse therapy. Truly, it has revolutionized the management and care of the tuberculous sick, opened wide for them new vistas of hope for a return to lives of usefulness, and has rolled back the heavy curtain of gloom and despair obscuring their horizon.

Before going on to a very brief consideration of some of the principle collapse measures, it must be urgently emphasized that the rest and upbuilding phase of the treatment program be not neglected. Rest in the treatment of tuberculosis has truly stood the test of time, and remains today the sheet anchor. Collapse therapy, notwithstanding its epochal achievements, is a supplement to rest, not a substitute for it. Rest, wholesome nourishing food and an invigorating climate have been for some time the great triad. While champions of climate are in some measure justified, we have tended today toward the adoption of the tenet: it is what you do, rather than where you do it.

The modern tuberculosis sanatorium of today is the ideal meeting ground of the old and the new, of the conservative and the radical. Within its walls the patient is taught the ABC's of the problem which well bids to confront him throughout his life. Here he is placed upon, and skillfully and cheerfully sustained in, the strict and often prolonged rest regime which is to be his lot for some time to come. Here the pneumothorax, the thoracoplasty or some other form of collapse for his sick lung, is inaugurated. It may be almost axiomatically stated that practically every patient would be better off for initiating his or her treatment in a modern

sanatorium, which is adequately equipped and staffed for this purpose.

Collapse therapy, aside from the brilliant results often obtained, is a most fascinating field; but its proper employment may tax the judgment and skill of the physician to the utmost. A procedure may be used singly or in combination with others. The application may be unilateral or bilateral, and in the latter event, alternating or simultaneous. In the utilization of collapse treatment, the generally accepted pattern is to employ first the most conservative measure which promises reasonably well to affect the desired result; and to resort, step by step, to the more radical ones as an evaluation of the clinical picture warrants their adoption. To those of us who are blessed with the genius of an analytical and scientific foresight, and surely there must be only a few, there may come the reward of avoiding those futile intervening steps.

To artificial or therapeutic pneumothorax still goes the accolade, since it is the simplest, safest and most effective. Furthermore, it is revocable in contrast to some of the other collapse measures which are irrevocable.

When lung collapse is called for, it is usually the wise plan to try pneumothorax first. The wisdom of abandoning an unsatisfactory pneumothorax early is being increasingly emphasized. The duration for which collapse by pneumothorax should be maintained averages from 2 to 5 years in the mild and moderately severe cases, respectively. Bilateral pneumothorax, alternating or simultaneous, is being performed with greater frequency.

In many instances where pleural adhesions preclude a satisfactory collapse, these adhesions may be severed by cauterization or by the high frequency current, and a satisfactory collapse may result. This operation is called intrapleural pneumonolysis. It requires special instruments and consummate skill. The interpolation may be made here that while a thoracoplasty is preferable to an unsatisfactory pneumothorax; conversely, a satisfactory pneumothorax is to be preferred to a thoracoplasty. In this light, pneumonolysis can be better judged. The open operation, for the purpose of severing adhesions, is now rarely done.

Extra-pleural pneumothorax and extra-pleural oleothorax, are operative procedures which have, during the past few years, shown as brilliant novae in the therapeutic firmament. At present, due to operative hazards, limited indications and uncertain remote results, their light is dimming. They represent extensions and modifications of the old pack operation or plombage, which latter still serves a useful purpose. Here again, the trend is toward other more stable procedures, as for instance, a partial or selective thoracoplasty.

A permanent diaphragmatic paralysis by an exairesis of the phrenic nerve, is very rarely performed today, and practically never on the left side. The operation of choice is a crushing of the nerve, producing a paralysis lasting 6 to 10 months. It may be repeated as needed. Phrenic nerve operations are infrequently done today as a primary procedure; but usually as a supplemental one.

Oleothorax, substituting oil for filtered air, still finds a useful place; but with ever-narrowing indications. Inherent dangers and technical difficulties dictate careful deliberation before its advocation.

Pneumoperitoneum, injecting air into the abdominal cavity, is proving to be a most valuable collapse measure in pulmonary tuberculosis. It is often combined with a phrenic nerve crush on the more affected side. The chief indication for pneumoperitoneum is advanced bilateral disease for which nothing else can be done at the time. An associated tuberculous enterocolitis, not uncommon in this group of cases, is often dramatically benefited. Frequently, pneumoperitoneum enables the patient to undergo a more radical operation at a later date. This latter principle holds for many of the collapse measures. For example, a pneumothorax may be induced for several months for a lesion in one lung in order that the patient may better stand a thoracoplasty later, for a more extensive lesion in the opposite lung.

This brings us to thoracoplasty, a formidable operation, performed extra-pleurally, which is irrevocable. With modified operative procedures, improved technic and with a vastly enlarging experience, thoracoplasty has come to rank second only to pneumothorax in the collapse parade. No longer need be applied that dread slogan: pain, posture, pus. It is curative, it is permanent, it is definitely in the ascendency.

Another of the novae, whose brilliance appears to be fading, is cavitary suction by inserting a catheter through the chest wall, the Monaldi operation. It is messy, dangerous, and to date has given only questionable results. As with most new procedures, brilliant results have been occasionally reported. Even in some of

these cases, however, subsequent developments have dampened the enthusiasm enjoyed at the outset. Cavity drainage should not be done if further surgery is contemplated, as the fistulous tract would foul the surgical field.

Surgical extirpation of the lung in pulmonary tuberculosis is feebly knocking at the door. To what extent the knock will be answered by an ever-widening opening of this door, remains for the future to disclose. Your essayist, if he may be indulged the expression, is keeping his fingers crossed. The chief indication at the present time for pneumectomy is an extensive unilateral disease in which a stenosing tracheobronchitis plays a dominant role.

Time permits only the mention of a few salient points in the case-finding campaigns. By our improved and new methods of investigation, tuberculosis is being found early, before symptoms occur, and at a time when it is easily curable. It is being looked for in the apparently healthy groups, in contacts and in the susceptible racial, industrial and economic groups. The yield of the unsuspected cases of tuberculosis by these surveys has been considerable; and in some instances, startlingly so. Rejections, because of tuberculosis, in the selective service draft, is aptly proving this point.

The development of the paper roll, the 4x5-inch and the 35-millimeter film have gone a long way in solving the big question of x-ray cost. Universal x-ray examination is our ultimate goal, for by this it is possible to discover practically all existing cases of clinically significant tuberculosis. This could, in turn, lead to the possible complete eradication of the scourge.

We have completed our condensed, and I fear all too sketchy, review of the 1942 model. While we may pray that it will roll smoothly along the open highways to a happy fulfillment of its destiny, dark and forboding clouds which are now forming presage a stormy journey. It may be that our battered and bruised world, as it emerges from the cataclysmic devastation and destruction into which it is now plunged, will once again see the white plague, astride its charger, and in company with the other grim horsemen of the Apocalypse, ride forth on its ugly mission. We can only work the harder and hope for the best.

314 Doctors Building

THE ROLE OF THE BRONCHIAL TREE IN THE PATHOGENESIS OF PULMONARY TUBERCULOSIS*

By BENJAMIN L. BROCK, M.D.
Waverly Hills, Kentucky

The efficient manner in which the normal bronchial tree cleanses itself of foreign material under ordinary conditions has long been known, but due consideration has not been given it in pulmonary tuberculosis. It will be my endeavor, therefore, to emphasize the normal function of the bronchial tree in the prevention of reinfection tuberculosis. It will be my attempt also to show how unfavorable conditions affecting this normal mechanism may be responsible for the retention of tuberculous exudates and how inadequate drainage results in the development of disease with spread to the pulmonary bed distal to the blockage.

Several investigators have observed the presence of a very complex peristaltic-like action in the tracheobronchial tree. Macklin[1] has described "an elongation of the bronchial trunk and its branches during inspiration and a corresponding shortening of these structures during expiration; a dilatation of the bronchi during inspiration, narrowing during expiration; a downward motion of the lower end of the trachea and main bronchi and lung root in passing from expiration to inspiration, and an upward motion in passing from inspiration to expiration." Macklin emphasized also the

"restricted movement to the bronchial tree in the area of the human lung which lies between the root zone and the fixed wall behind and above the root region."

This is the area in which tuberculosis commonly develops and progresses.

Hudson and Jarre demonstrated in iodized oil studies the lengthening and shortening of the bronchial tree during respiration. At the end of inspiration the iodized oil was clearly seen to fill the smaller bronchioles, whereas during the expiratory phase the bronchi and bronchioles shorten and contract and the iodized oil was no longer seen in the smaller bronchioles. These authors also demonstrated an absence of this "peristaltoid" movement in ectatic bronchi.

William Snow Miller found that the bronchial musculature is arranged in a

"net work of geodesic bands which prevent any tan-

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gential motion and, in this way, provides for the greatest amount of extension and contraction of the bronchi. The muscle bands form a sphincter about the openings of the alveoli into the bronchioli respiratorii and ductuli alveolaris and also about the openings of the atria. The action of the bronchial muscle in expiration is active and not passive and its action in the regulation of the tension of the air within the atria and air space deserves more attention."

According to the above authors, the evacuation mechanism of the bronchial tree consists, therefore, in addition to the well known ciliary action, and the coughing mechanism, of a "peristaltoid" movement of the bronchial wall produced by the bronchial musculature and assisted by the elastic tissue. Any crippling of this mechanism would lead to a retention of infectious exudates within the bronchial tree.

Let us consider the possible sequence of events which take place following the inhalation of tubercle bacilli from an exogenous source into the lungs of an individual already primarily infected. The bacilli, under these conditions, are not treated as bacilli of first infection which, like dust particles, are phagocytized and carried by monocytes to the lymphoid tissue situated in the interstices of the lung. This is believed to be the chief protective mechanism in the prevention of the extension of primary tuberculosis to other parts of the lung. Bacilli of reinfection, on the other hand, together with their exudates formed as a result of allergy, remain within the bronchioles or other open air spaces and have every opportunity to be evacuated from the lungs. Under ordinary conditions an individual does not inhale into his lungs at any one time an overwhelming dose of tubercle bacilli. The exudate formed as an allergic response to them is therefore not usually large enough to block the bronchioles. Since it takes days for tubercle formation to occur it is believed that the normal bronchial evacuation mechanism may be truly as effective in protecting the individual from reinfection of exogenous origin as the lymphatic system is effective in preventing reinfection from primary foci situated in the interstices of the lung.

It is believed, therefore, that the requisites for the development of progressive pulmonary tuberculosis are: (1) reinfection with the tubercle bacillus, (2) the formation of tuberculous exudates within the lung and bronchial tree as a response to allergy, and (3) the mechanical failure of the bronchial tree to evacuate the infectious exudates. This mechanical failure of the bronchial tree to cleanse itself is due basically to the blockage of the bronchi or bronchioles by the tenacious exudate. Certain factors which might have a definite influence on the retention of infectious exudates within the bronchial tree and which might well play a leading role in the pathogenesis and localization of pulmonary tuberculosis will be discussed as follows:

(1) Physical obstruction and developmental abnormalities. (2) The degree of allergic response of an individual to reinfection. (3) A difference in degree of functional ability of the bronchial tree in the apex and in the base of the lung, and its influence on the localization of pulmonary tuberculosis. (4) Alteration of the function of the bronchial tree following collapse therapy and its effect on drainage. (5) The effects of pathologic changes within the parenchyma or within the interstitial portion of the lung on the drainage mechanism. (6) The possible effect of the stage of anatomical development of the bronchial tree and of rapid growth of the bronchial tree in certain age groups on the drainage mechanism.

(1) *Physical Obstruction and Developmental Abnormalities.*—Physical obstruction to a bronchus or bronchiole by endobronchial cancer or endobronchial tuberculosis produces sequelae which are clearly understood and yet the same mechanical principle of obstruction has not been applied with equal significance to tuberculous exudates to explain the spread of pulmonary tuberculosis. Abscess formation is a common complication of endobronchial cancer when the malignant lesion is large enough to produce stenosis. Where bronchial tuberculosis exists in the presence of minimal tuberculosis the chances are that the lesion within the lung will not spread as long as adequate drainage occurs. If bronchial tuberculosis causes sufficient stenosis, however, a marked pneumonia will develop rapidly distal to the stenosis. Breaking down of the lung tissue with cavity formation may take place with unusual rapidity as a result of lack of drainage, and clinically the patient may be very ill. This demonstrates most clearly the mechanical side of the spread of tuberculosis, and further shows that acute rapidly spreading tuberculosis is not, necessarily, as previously believed, due to a lack of resistance or immunity of the individual to the disease.

It is reasonable to believe also that other less obvious physical or developmental changes within the bronchial tree may be responsible for a retention of tuberculous exudates with the

development and spread of tuberculosis. A developmental widening or narrowing of a bronchus or bronchiole, or a kinked or markedly curved bronchus or bronchiole may function less efficiently with limitation of the "peristaltoid" movement and contraction of the bronchus in question. These abnormalities might well favor the implantation of bacilli and the retention of their exudates.

(2) *The Degree of Allergic Response of the Individual to Reinfection.*—The amount of exudate thrown out within a portion of the normal bronchial tree is dependent usually upon the degree of allergic response to the bacilli of reinfection. If this allergic response is great, as in the negro, blockage of the bronchioles occurs quickly and rapid spread to the pulmonary bed distally takes place in a manner similar to that which occurs where physical stenosis by endobronchial lesions exists. In addition the tuberculous pneumonic process which is commonly seen in the negro greatly inhibits the elasticity of the lung and helps to prevent the evacuation mechanism from functioning. Progressive disease results. The degree of allergic response of an individual to reinfection is very important, therefore, in determining whether the bronchial tree will be functionally able or not to set up adequate drainage. Upon this will depend the course of the initial lesion, whether it will clear or whether it will progress. The greater allergic response of the negro to reinfection may be due to several factors which are not well understood.

(3) *A Difference in Degree of Functional Ability of the Bronchial Tree in the Apex and in the Base of the Lung, and Its Influence on the Localization of Pulmonary Tuberculosis.*—This has been discussed in detail by the author in previous publications. Our conclusions[2 3 4 5] on the pathogenesis and usual localization of pulmonary tuberculosis in the upper part of the lung have been based on a study of over 200 patients treated in the Waverly Hills Sanatorium since 1935 by simply raising the foot of their beds. The patients selected have been those with disease chiefly located in the upper part of the lungs, and showing inadequate drainage from the bronchial tree in this area. These patients with very difficult expectoration, irritable cough, shortness of breath, and inability to relax served to illustrate most clearly the beneficial effects of this position in the treatment of their disease. In 85 per cent of our patients with difficult expectoration treated in this manner ease of expectoration followed shortly the elevation of the foot of the bed. The other symptoms mentioned improved or disappeared in like percentage following ease of expectoration.

Increase in intra-abdominal pressure which follows the elevation of the foot of the bed results in a definite rise of the diaphragm. This rise in the diaphragm relieves the restricted mobility of the apical portion of the lungs and indeed allows for a more evenly distributed expansion and relaxation of the lungs during respiration. The upper part of the lung now functions more normally with greater lengthening and shortening movements of the bronchial tree. This results in a natural elimination of the accumulated infectious exudates in the otherwise less mobile apex. Sputum previously difficult to raise now literally wells up into the throat as more active movements of the bronchial tree in the apex are resumed. It was concluded in previous publications by the author that retention of infectious exudate in the bronchi and bronchioles in the upper third of the lung, due to comparative lack of mobility of the lung in this region, is responsible not only for the prevalence of tuberculosis in this region but for its progression and chronicity. The base of the lung is usually not initially involved in a tuberculous process because of the very active mobility of the lung in this region. The base of the lung, however, may be very effective under adverse conditions in expelling exudates following serious bronchogenic spreads. We have all seen such spreads to the base from an active lesion in the upper part of the lung. Such basal lesions may often clear while the original upper lobe lesion remains unchanged.

(4) *Alteration of the Function of the Bronchial Tree Following Collapse Therapy and Its Effect on Drainage.*—In a previous publication by the author[4] it was stated that artificial pneumothorax is successful when the collapse is good, not because the lung is put at rest but because compression of the lung forces out infectious exudates which the movements of the lungs and bronchial tree during respiration were unable to evacuate. By ridding the bronchial tree of these infectious exudates and by collapsing uninvolved lobules, a retrograde spread of disease into these lobules is prevented. Following initial pneumothorax refills, the sputum may temporarily increase in amount due to the compression of the lung. If the collapse is successful there is no further spread of the disease. The bronchi remain patent

and after a time exudate is no longer produced. If collapse is partial and open cavity or active disease is present, exudates will continue to develop and, due to loss of elasticity of the lung following partial pneumothorax, the exudate may be very difficult to raise. The impaired coughing reflex and the loss of the lengthening and shortening movements of the bronchial tree during respiration favor the stagnation of exudate within the lungs and bronchial tree of the partially collapsed lung.

In our original publication in 1938[5] in which we discussed the elevation of the foot of the bed in the treatment of pulmonary tuberculosis, emphasis was placed on the rise of the diaphragm and its mobility in explaining the cleansing mechanism of the bronchial tree, particularly in the apex of the lung. It is believed that patients who have had a previous phrenic paralysis are not able to evacuate these exudates as well as those who have not lost the function of the diaphragm. This is particularly true of the patients who still have open cavity or other active disease following phrenic paralysis. Since our publication numerous writers have emphasized the importance of the normally functioning diaphragm in thoracoplasty cases where the coughing mechanism is necessary in cleansing the bronchi of accumulated exudate. It has been our view for several years that a normally functioning diaphragm is better in most individuals than a paralyzed one. Fundamentally it is believed that one of the important functions of the diaphragm is to aid in cleansing the bronchial tree of foreign matter which might accumulate within it. If the normally functioning diaphragm is essential in cleansing stagnated exudate from the bronchial tree in certain patients with thoracoplasty, then it must follow that it is necessary but perhaps to a lesser degree, to the cleansing of the broncial tree in normal individuals and in tuberculous individuals whose lungs have not been collapsed. It must be stated, however, that where phrenic paralysis results in the closure of cavity, good results will be obtained since further exudate will not be formed. If cases are not properly picked for phrenic paralysis, thick walled cavities may remain open, and these patients will be left at a disadvantage because of a lessened cleansing power of the bronchial tree. Most of the early bilateral phrenic paralysis cases did poorly and no doubt for the reasons given above. The difficulty of the bronchial tree to cleanse itself of tuberculous exudates in pneumothorax, thoracoplasty and phrenic paralysis cases demonstrates the active part played by the normal elastic lungs and normally functioning bronchial tree in accomplishing adequate drainage. Upon this depends not only the prevention of the development and spread of tuberculosis but the clearing of an already existing lesion.

(5) *The Effects of Pathologic Changes Within the Parenchyma or Within the Interstitial Portion of the Lung on the Drainage Mechanism.*—The effects of exudative changes within the parenchyma of the lung on drainage of exudate from the bronchial tree have already been discussed. In general it is believed that any pathologic process, exudative, infiltrative or fibrotic, within the lung which has a tendency to limit its elasticity would favor the retention of tuberculous exudates and therefore would favor a chronic and progressive disease. In like manner, pathologic changes within the interstitial portion of the lungs along the walls of the bronchi, such as are seen in silicosis and perhaps also in old age, would provide a fertile field for the implantation of tubercle bacilli and a retention of them and their exudates within the bronchial tree. This would therefore favor the development of tuberculosis in such individuals. Some of the manifestations of silicosis are loss of elasticity of the lungs due to peribronchial beading and thickening with fibrosis. This may be slight at first but may become marked later as the disease advances. Pleural adhesions may also alter the normal "peristaltoid" movements of the bronchial tree. The diaphragm in late stages of silicosis may become tented and there may be marked limitation of motion of the diaphragm. All of this would favor a stagnation of exudate within the bronchial tree.

It has long been known that secondary bacterial invasion of the silicotic lung is not uncommon and according to Gardner 75 per cent of those in whom silicosis develops die of tuberculosis. Chronic bronchitis, bronchiectasis, abscess and pneumonia are not uncommon complications. This susceptibility to bacterial infection has not been adequately explained. Irritation of the respiratory tissues by the silica particles rendering the mucous membranes more susceptible has been advanced as one explanation. The toxic effect of certain organic dusts has been suggested as an influencing factor. It is believed, however, that the chief factor influencing the development of tuberculosis in individuals suffering with silicosis is a mechanical one. The ciliary movements, the cough-

ing reflex, and the lengthening and shortening movements of the bronchial tree are able under normal conditions to cleanse the lungs and bronchial tree of accumulated infectious exudates. When the normal elasticity of the lungs is impaired as in silicosis, exudates within the bronchial tree cannot be evacuated effectively and disease will result. Ordinarily small numbers of tubercle bacilli inhaled into the lungs of individuals already primarily infected produce a relatively small amount of exudate and may therefore be easily evacuated through this mechanism described above. In a hardened silicotic lung, however, small numbers of bacilli inhaled into the lungs may be retained and set up a reinfection tuberculosis which is usually fatal. For this reason it is my belief that exogenous reinfection plays a leading role in the development of progressive tuberculosis in individuals with silicosis. Cummings has demonstrated for example that

"it is perfectly possible to have an excessive silicosis hazard without an associated increase in the frequency or severity of tuberculosis, and conversely, an excessive rate and degree of tuberculosis with only a mild silicosis hazard. In one mine of 1,200 where silicosis was a serious problem not one case of tuberculosis was found."

This is explained as due to the absence of infection in the community, and emphasizes the point that while silicosis predisposes to tuberculosis it is necessary to have sources of infection if the disease becomes prevalent. Cummings also showed that fresh tuberculosis occurs in all ages in silicosis patients and that new infections were not uncommon after 40.

It is interesting to note that anatomically the distribution of the lesion in silicosis corresponds to a certain extent, in the early stages at least, to that of primary tuberculosis. The silicotic lesions may extend into the apices, but in a large number of early cases the apices are not involved. As is well known, the primary tubercle is found more commonly in the lower part of the upper lobe or upper part of the lower lobe. It is believed that this is not a mere coincidence, but is due to the fact that tubercle bacilli and dust particles are carried more directly by the air current to the areas mentioned. Tubercle formation in primary infection develops in that portion of the lung in which the bacilli first lodge. They are phagocytized and carried, like the dust particles, to the nearest lymphoid tissue within the interstices of the lung. The tissues are not allergic to them and they do not remain within the bronchial tree as do bacilli of reinfection. The evacuation mechanism of the bronchial tree does not play an important part, therefore, in the prevention of primary tuberculosis for reasons stated above.

This brings us to a discussion of tuberculosis in the aged and why it becomes prevalent in this age group.

There are no obvious reasons according to Cummings and others for expecting a different physiologic response to the tubercle bacillus before the age of 40 and after this age, and there are no very good reasons to believe that there is an alteration of the immune mechanisms in the aged. X-ray films of old individuals show rather characteristically definite thickening along the bronchial tree. Frequently, too, thickening of the pleura may be seen. Calcification of the cartilages is the rule in the aged and this factor, together with a loss of resilience of the lungs, favors the implantation and retention of bacteria in the bronchial tree. Again as in silicosis, the bronchial tree finds it more difficult to cleanse itself of exudates with the result that pulmonary disease is a frequent complication. The high mortality rate from tuberculosis in old men may be explained by the fact that they are exposed to a greater extent than women in the same age group. H. L. Sampson interpreted a series of 774 films taken of Kentucky coal miners, and the results of this study seem to show the reinfection may develop in any age period, more particularly late in life. It was found that there was an increase in frequency of tuberculous lesions in each successive five-year age period.

Sampson points to a very significant fact that in following 8,000 miners for an eight-year period none of them showed at any time during this period new tuberculosis developing in the immediate vicinity of a calcified primary focus. This would favor the view that exogenous reinfection occurs often. It also favors the view that tubercle bacilli and their exudates which would ordinarily be evacuated from the normally functioning bronchial tree would be retained in the aged due to a loss of elasticity of the lungs. A lack of immunity does not explain the increased morbidity and mortality in the aged. Let us always keep in mind stenotic endobronchial tuberculosis and its sequelae and we can never minimize the importance of drainage in every tuberculous individual, no matter what might be his race or age.

(6) *The Possible Effect of the Stage of Ana-*

tomical Development of the Bronchial Tree and of Rapid Growth of the Bronchial Tree in Certain Age Groups on the Drainage Mechanism.—During the very rapid growth of an individual during certain age periods it is possible that rapid changes which take place in the bronchial tree may possibly affect its cleansing powers. The normal mechanics of the bronchial tree have appeared to be so necessary thus far in this discussion that it is applied also to this group but with some hesitancy.

In infancy, for example, and during the next two years at least, reinfection tuberculosis usually results in a progressive lesion and the mortality rate in this group is high. In the next age period extending up to puberty, on the other hand, reinfection tuberculosis is conspicuous by its absence. The usual explanation for the high incidence of reinfection tuberculosis in infancy and the earliest period of childhood is the greater likelihood of exposure from an open case in the home and the fact that this group has not lived long enough to acquire an immunity to the disease. The child between the age of 4 or 5 and puberty must have practically the same chances of reinfection and yet he does not break down with reinfection tuberculosis except comparatively rarely. The immunity factor must also be discredited for the reason that after the age of puberty and throughout the 'teen age period this so-called immunity is lost and again we have a high mortality from tuberculosis, particularly in girls. It is my belief that due consideration should be given the functional ability of the bronchial tree during the different periods of life to cleanse itself of infectious exudates in helping to explain the morbidity and mortality rates in these periods. In infancy the minuteness of the bronchial tree, the delicate structure or fragility of the walls of the bronchi and bronchioles, the diameter of their lumina, and their collapsibility may well play a part in its functional inability to cleanse itself of infectious exudate.

During the rapid growth period the structure of the bronchial tree may be more delicate and may not function with the same degree of efficiency as a more mature or less rapidly growing structure. A given number of bacilli of reinfection inhaled into the lungs of an adult with a strong, well developed, mature, and normally functioning bronchial tree might easily be evacuated from the lungs due to the relatively small amount of exudate formed. The same number of bacilli of reinfection inhaled by an infant might easily result in reinfection tuberculosis with progression to fatality. The exudate formed might be the same in both adult and infant, but relatively it would be much greater in amount in the infant and be more difficult to evacuate.

During the next period of life it is difficult to understand on any basis why few, relatively, become reinfected and die of their disease. However, the anatomy and functional ability of the bronchial tree may play a part in explaining this phenomenon. The bronchial tree may become anatomically stabilized and functionally developed following the first rapid growth period of life and may be able successfully to evacuate exudates formed within it. In the next period, that of puberty and early adult life, we enter another rapid growth period. There are no obvious reasons for expecting a different physiologic response to the tubercle bacillus or an alteration of the immune mechanisms, whatever these may be, in this age period than in any other age period. In the teen age, particularly in girls, where development is rapid, we may again be dealing with a functionally inefficient bronchial tree. The delicacy of the bronchial tree due to rapid growth, the possible stretch to which it is subjected, and its possible easy collapsibility deserve further consideration as factors in causing a stagnation of exudate within the bronchial tree and therefore as factors in the pathogenesis of pulmonary tuberculosis in this age group.

SUMMARY

(1) The normal bronchial evacuation mechanism is briefly reviewed.

(2) This mechanism may be as effective in protecting the individual from tuberculous reinfection of exogenous origin as the lymphatic system is effective in preventing reinfection from primary foci situated within the lung.

(3) The mechanical failure of the bronchial tree to cleanse itself of infectious exudates plays a leading role in the pathogenesis of pulmonary tuberculosis.

(4) Certain factors which might have a definite influence on the retention of infectious exudates within the bronchial tree are discussed as follows:

(a) Physical obstruction and developmental abnormalities.

(b) Degree of allergic response to reinfection.

(c) A difference in functional ability of the bronchial tree in apex and base of the lung in

determining localization of pulmonary tuberculosis.

(d) Alteration of the normal function of the bronchial tree following collapse therapy and its effects on the drainage mechanism.

(e) The effects of pathologic changes within the parenchyma or within the interstitial portion of the lung on the evacuation mechanism.

(f) The possible effect of age of the bronchial tree and of rapid growth of the bronchial tree in certain age groups on the cleansing mechanism.

(5) Exogenous reinfection tuberculosis is no doubt much more common in all age groups than is generally believed.

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Waverly Hills Sanatorium.

SPONTANEOUS MEDIASTINAL EMPHYSEMA*

SUMMARY AND REPORT OF A CASE

By EDWIN M. MEEK, M.D.
Huntington, West Virginia

Mediastinal emphysema is not new as a complication of injury or disease. Laennec knew about it. In 1888, Muller[1] published the signs of mediastinal emphysema as being a disappearance of cardiac dullness to percussion and the finding of precordial bubbling crepitations synchronous with each heart beat.

Mediastinal emphysema that is spontaneous did not come to the attention of the modern physician until Hammon,[2] of Baltimore, published his paper in 1937. He saw his first case in 1933.[3] This patient was a Washington physician who had substernal pain that resembled that of coronary occlusion, but on auscultation there was a peculiar crackling precordial sound synchronous with each heart beat. Hammon was puzzled, and the finding of air between the heart and the anterior chest wall on x-ray examination several months later of another patient with identical symptoms and signs made him realize the diagnosis of the first case.

Scott[4] emphasized the resemblance of spontaneous mediastinal emphysema to coronary occlusion in 1937.

Others have reported cases: Morey and Sosman,[5] Faulkner and Wagner,[6] Caldwell,[7] Murphey and Zeis,[8] Styron, two cases,[9] and Matthews.[10]

Cases have been reported in the newborn by Smith and Bowser,[11] who reported two cases with recovery. Fisher[12] reports a case with autopsy findings and Gumbiner and Cutler[13] report a case with recovery. Macklin, in discussing the paper by Gumbiner and Cutler, mentions another case of Fisher's in an infant who was autopsied. Hammon describes the symptoms of spontaneous mediastinal emphysema as follows:

"(1) Interstitial emphysema of the lung may occur without the least effort, when the patient is quietly standing, sitting, or lying down.

"(2) When the air reaches the mediastinum, distending the mediastinal tissues, the patient complains of pain which is often very severe. Usually the pain is located beneath the sternum; sometimes it radiates to the back; at other times to the neck and shoulders, rarely to the arms. Accompanying the pain there is often a sensation of pressure or of expansion beneath the sternum.

"(3) There are no constitutional symptoms, no evidence of shock. The temperature, the pulse and respiratory rates, the blood pressure and the leukocyte count are little if at all altered.

"(4) In many instances a peculiar and distinctive sound is heard over the heart synchronous with its contractions. Usually the sound is heard only during systole, but at times it may be heard also during diastole.

"(5) The area of cardiac dullness is diminished or completely obliterated, the dullness being replaced by a hyperresonant percussion note.

"(6) Pneumothorax often occurs. The pneumothorax is usually small and may not be suspected until a roentgenogram of the chest has been taken. Pneumothorax was discovered in two of the seven cases I have observed, in both instances on the left side. I see no reason, other than accidental, why it should have been on the left side and am inclined to predict that in other cases it will be found upon the right.

"(7) The roentgenogram is a valuable aid in establishing the diagnosis. In instances in which the characteristic sound over the heart is absent the roentgenographic evidence of air in the mediastinum may be decisive.

"(8) When air appears in the subcutaneous tissues of the neck the diagnosis is at once assured."

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The bizarre character of the crackle heard on auscultation and often felt and heard by the patient himself is quite striking, and most observers remark that once heard it is never forgotten. In the case herewith reported the sound seemed like a metallic click heard both during systole and diastole.

The symptoms vary from very minor with few physical signs, as in my case, to very severe depending upon the amount of air in the mediastinum, the age of the patient, and concomitant diseases. The cases reported in infants had symptoms much more severe than those in the usual adult and were not preceded by any unusual birth trauma. Response to aspiration of accessible air was gratifying. Faulkner and Wagner's case complicating severe asthma in an adult resulted in death of the patient. Hammon believes the air comes from ruptured alveoli and travels along the interstitial tissue of the lung into the mediastinum. Macklin[14] in overinflation of the lungs of experimental animals found multiple small ruptures in the alveolar bases with the resultant leaking out of air into the vascular sheaths and tunneling along these sheaths into the mediastinum. In cases with pneumothorax accompanying the mediastinal air it is believed the air goes from the mediastinum into the pleural cavity and not vice versa. It has been found easy to force air from the mediastinum into the pleural cavity, but never possible to force air from the pleural cavity into the mediastinum.

Macklin thinks the rupture of the alveoli in the human is often due to isolated patches of emphysema with its resultant overdistention of alveoli compensating for localized areas of atelectasis, especially in view of the fact that most cases occur with little or no generalized increased intrapulmonary pressure.

Fisher's autopsy of an infant dying of spontaneous mediastinal emphysema showed moderately well inflated lungs with emphysematous blebs and patchy atelectatic areas. There were accumulations of gas bubbles in the perivascular sheaths of the pulmonary vessels. The pulmonary vessels were compressed by this gas. This corresponds to Macklin's findings in experimental animals.

The treatment of adults is expectant in the mild cases with reassurance, analgesics, and rest. Caldwell found that showing a patient a copy of Hammon's report did the patient more good than anything else Caldwell could do. The printed word carries authority for truth never achieved by the spoken word. Smith and Bowser aspirated air from the mediastinum from one of their cases in an infant with improvement. Gumbiner and Cutler reported a dramatic response to the aspiration of air in their infant. In the severe case of Faulkner and Wagner, incision of the skin and subcutaneous tissue above each clavicle allowed gas to escape and was followed by some slight improvement. This patient later died.

The prognosis of most cases of spontaneous mediastinal emphysema in adults is good. Some cases recur, but practically all get well and remain well.

Following is the report of a case:

Mr. H. M., aged 27, was always robust and healthy until January 24, 1942, when he unloaded some storage batteries. Several days later he noticed a definite and rather severe soreness to the left of his lower sternum. The soreness disappeared in two or three days, and a clicking sound synchronous with the heart beat was noticed when he was lying on his left side. This sound was present in no other position. A pain appeared over his left shoulder blade and was sharp, continuous, and accentuated by respiration, especially by deep inspiration. He could hardly breathe because of the pain. There was no cough, no fever, no palpitation, and no radiation of the pain.

The patient's past history revealed measles, mumps, pertussis, chicken pox, and streptococcic throat. There was no scrofula, no arthritis, no growing pains, no chorea. The mother, aged 42, is well; the father, aged 54, is well; the one sister, aged 28, is well. There are no dead siblings, no family history of tuberculosis, diabetes, heart disease, or kidney disease. He went through junior high school and at the age of 17 went to a CCC camp and was there for fourteen months. While he was there he had an inguinal hernia repaired. He worked at the International Nickel Company, operating a machine and working around acid, for two years. He was in the cutting room of a pants factory for a year. Then he worked in a furniture store for nine months. He then worked in several gasoline stations. His last job had been in an automobile supply store.

His diet has been erratic. He uses alcohol moderately and smokes moderately.

The physical examination shows a healthy looking young man with a worried look on his face. The heart is the remarkable part of the examination. When the patient lies on his left side, and then only, there is a clicking sound synchronous with each heart beat that can be heard very plainly and even felt. The heart is regular. No enlargement and no murmurs are present. The breath sounds are vesicular to bronchovesicular. No rales or abnormal breath sounds are heard. His chest expansion is not limited on either side, both diaphragms descend well. Pulse is 72 and blood pressure is 120/80-78.

The fluoroscopic examination shows no abnormality of the size, shape, or position of the heart. Fluoroscopic examination, with the patient lying on his left side, shows a thin area of decreased density just below the left auricle that is interpreted as air. This area

of decreased density disappears when the patient is in upright position. An x-ray, with the patient in the left lateral position, was interpreted as essentially normal by Dr. Merrill Sosman.[15]

The patient's blood sedimentation rate was 5 millimeters in one hour; white cells 6,900; red cells 5,500,000; and hemoglobin 101 per cent. His Kahn was doubtful and Kline was four plus. His urine was negative.

He was treated with rest, sedatives, and reassurance.

On March 3, 1942, there had been no clicking for several days and no air was seen around the heart.

CONCLUSION

(1) Spontaneous mediastinal emphysema is usually a mild disease that may be severe when occurring in infants and when complicated by other diseases.

(2) Symptoms in most cases are substernal pain and a peculiar clicking sound heard with each heart beat. X-ray usually shows gas in the mediastinum.

(3) The treatment in minor cases is rest, sedation, and reassurance. In cases with subcutaneous emphysema the skin may be incised, allowing escape of the trapped air. Aspiration has been practiced in infants with success.

(4) Mediastinal emphysema should be thought of in all cases of chest pains and certainly in all newborn with respiratory embarrassment.

(5) A case is reported.

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401 Guaranty Bank Building

CONTROL OF PELLAGRA*

By WILLIAM DEKLEINE, M.D.
Washington, D. C.

The highest death rate from pellagra of record for the entire population of the United States occurred in 1928, only fourteen years ago. Seven thousand six hundred seventy-three (7,673) deaths were reported that year, of which 7,396 occurred in the thirteen states named in *Table 1*. The last figure represents a mortality rate of 22.4 per 100,000 for the entire population of this group of states.

The thirteen states named represent a section of the South were pellagra has been a major health problem for many years. It was the eighth or ninth highest cause of death, exclusive of accidents, during the peak years of 1928 and 1929 in South Carolina, North Carolina, Alabama, Arkansas, Georgia, and Mississippi. Since pellagra has never been a serious problem in any of the other states except in a few counties of West Virginia, Missouri and California, the data presented here relate only to the states given in the table except as otherwise mentioned.

Graph 1 shows that 1928 was the peak year in pellagra deaths, in the period from 1923 to 1940. Earlier statistical data indicate that there was a similar peak in 1917 and 1918. Unfortunately only five Southern states, namely, North Carolina, South Carolina, Tennessee, Kentucky, and Virginia, were in the registration area in 1917. We can therefore only estimate the rate for the total population of all thirteen states for that period.

Judging from the available data and general trends in pellagra mortality since that time we are inclined to believe that the rate was somewhat higher in 1928. Be that as it may, it is evident that 1917 and 1928 represent two somewhat equal peak years in pellagra deaths.

The year 1928 may become an important landmark in the history of pellagra in this country. It represents for the present at least the end of a rapidly increasing mortality rate and the beginning of a period of constructive effort to solve the problem. That effort has resulted in a marked reduction in deaths from this disease until it no longer ranks as an important cause of death in any state. We have probably never experienced a higher pellagra mortality rate in

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this country than was reported that year. Neither have we ever witnessed such a marked and continuous decline in these rates as has occurred since that time.

Now that effective control measures have been developed, there is reason to believe that the former high mortality rates may never recur. Eighteen hundred and eighty one (1,881) deaths

DEATH RATES FROM PELLAGRA PER 100 000 ESTIMATED POPULATION FOR THE YEARS 1923 TO 1940 INCLUSIVE BASED ON NUMBER OF DEATHS REGISTERED BY THE BUREAU OF THE CENSUS EXCEPT THE RATES THAT ARE UNDERSCORED WHICH ARE BASED ON STATE REPORTS TO THE U.S.P.H.S.

STATE	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940
N.C.	8.6	9.9	13.2	15.4	22.3	27.8	29.4	32.4*	21.5	14.7	11.9	13.1	11.3	10.3	9.6	7.3	5.8	4.7
S.C.	19.5	19.7	25.4	32.8	44.8	57.8*	54.4	45.1	33.3	24.4	18.3	18.9	16.3	14.9	14.7	12.5	7.8	8.5
ALA.	15.4	14.6	16.5	19.8	21.7	27.0*	25.4	24.0	16.8	13.1	13.7	11.4	9.4	11.1	11.1	12.5	10.0	8.6
ARK.	12.1	9.0	17.3	27.0	35.9*	34.5	27.9	26.2	22.9	11.7	12.0	9.7	10.0	11.1	7.4	9.4	7.2	5.3
GA.	15.1	11.5	12.6	14.6	21.2	29.6	30.2*	24.3	19.2	16.7	14.0	11.6	12.1	12.7	12.0	11.8	8.9	8.0
MISS.	21.9	23.0	29.9	29.2	36.2	38.3*	37.8	28.4	27.7	17.1	14.8	10.4	10.6	12.7	11.0	12.4	9.0	7.7
FLA.	8.9	8.6	10.2	10.2	16.6	21.0	22.0*	16.1	14.5	13.1	12.3	14.3	11.0	7.9	6.0	5.8	4.3	3.8
VA.	3.3	3.2	4.1	4.9	6.5	8.0	9.4*	9.0	8.2	5.1	4.7	4.9	5.5	5.0	4.2	4.3	2.4	2.1
TENN.	12.2	10.7	15.4	21.1	23.8*	20.3	15.9	15.5	11.3	10.7	8.5	8.3	7.8	8.7	7.2	7.3	5.2	3.6
KY.	2.7	2.3	3.5	5.7	6.2	6.9*	5.1	4.9	4.1	2.6	3.5	2.2	2.7	3.2	3.1	2.3	2.9	2.1
LA.	8.0	9.6	17.9*	13.5	16.9	16.1	13.7	13.0	11.3	8.2	8.9	6.4	5.9	5.1	4.3	6.4	3.4	3.2
OKLA.	3.0	2.6	5.6	8.9	7.8	10.2	11.8	12.5*	10.0	6.2	4.6	4.4	5.4	7.4	4.6	5.1	4.1	2.6
TEX.	5.0	5.7	10.3	13.6	14.3	15.1	15.0	19.0*	17.6	11.7	11.9	9.4	10.5	11.5	9.3	8.6	6.3	5.5
ALL 13 STATES [12]	9.8	9.4	13.2	15.9	19.5	22.4*	21.5	20.4	16.5	11.7	10.6	9.4	9.1	9.5	8.2	8.1	6.0	5.1

[11] Excludes alcoholic pellagra which is negligible.

[12] Rate computed from sums of population and sums of deaths for thirteen states.

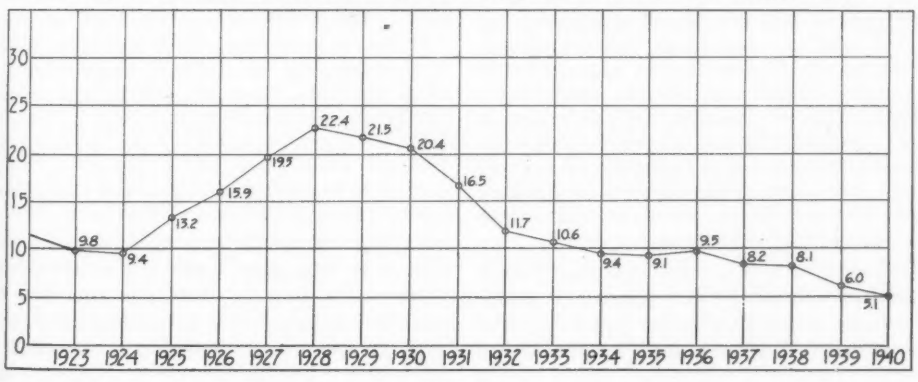
Deaths taken from State Health Officers Reports to the U.S.P.H.S. are underscored.

* Peak rate within the period covered by the table.

This table was compiled in the Division of Public Health Methods, National Institute of Health U.S.P.H.S.

Table 1

DEATH RATES FROM PELLAGRA PER 100,000 POPULATION IN THIRTEEN SOUTHERN STATES



Graph 1

were reported in 1940, which represents a rate of 5.1 per 100,000 population, and a reduction of 77 per cent from the peak rate of 22.4 in 1928. The data available at present for 1941 indicate that the rate for that year will be still lower.

The graph shows that the decline in death rates, which began in 1929, has not followed an evenly downward course. The greatest reduction occurred in the period from 1929 to 1932 inclusive, with a drop of nearly 50 per cent. That is particularly significant as will be pointed out later because it occurred during the most stringent years of the depression and prior to the inauguration of Federal relief, which began in 1933. Had it not been for the introduction of practical control measures at that time the rate would probably again have increased as it did in previous years, under similar circumstances.

The marked reduction in that period is evidently the result of the introduction of certain new control measures. That was the period in which the American Red Cross, assisted by local and state health departments, farm bureaus and other agencies, engaged in an extensive program of yeast distribution and promotion of gardening. That work was begun in four states in 1927 following the Mississippi flood and gradually extended to adjoining states so that by 1930 the program was in full swing all over the South.

Gardening was not thought of at the time as a pellagra control measure but rather as a means for overcoming a serious food shortage. That shortage occurred because the flood of 1927 did not recede until midsummer, too late to make a crop, and again because of the devastating drought which occurred in the summer of 1930 in the South and other sections of the country.

It is quite evident now that these two projects, together with the educational work necessary to promote them, were largely responsible for this marked decrease in pellagra deaths prior to 1933. This was discussed by the writer[1] in a paper entitled "Recent Trends in Pellagra," and will therefore not be repeated here. There is little doubt that yeast, which is an excellent source of the pellagra preventive, played the major role in this program.

Gardening is also a very important health measure and should be incorporated in health and welfare programs wherever possible. "Victory gardening," a term used by the United States Department of Agriculture, should become a national slogan, not only for the duration of the war, but for all time. It will contribute materially to victory for health, particularly among families with a low income. It provides the protective foods which are otherwise not available in adequate amounts to a large part of the population. Gardening is an important defense as well as health measure.

The graph shows that the downward trend in pellagra deaths continued at a much slower rate from 1933 to 1936, inclusive, with a very slight increase in 1936, and then again with a slightly accelerated rate from 1937 to 1940, inclusive. The slower rate of decrease from 1933 to 1936 is probably the result of a sharp reduction in the amount of yeast distributed and a lagging interest in the gardening program. As the economic depression continued and less money was available for the purchase of yeast and garden seeds, these activities were curtailed in many sections. Had it not been for the personal interest of pellagrins themselves who had learned the value of yeast, the death rate would probably have risen again at that time. I know from close association with this control program for several years that many pellagrins begged for a package of yeast when they became ill. It was the only effective method of treatment available to them at that time. Since there was not enough yeast for all it could be given only to those who needed it most.

There was also a sudden shift in interest on the part of public health and welfare workers in 1933 with the advent of the "new deal." The depression was then at its worst. There was urgent need for food everywhere. As Federal funds became available, social workers turned their attention largely to food distribution. Except for some Red Cross chapters, the distribution of yeast and the promotion of gardening were largely abandoned for the time being.

It now appears that the free distribution of food started by the Federal Government in 1933 did not materially affect the pellagra death rate as has been intimated.[2] At any rate, there was little change in the rate from 1933 to 1936, inclusive; a period in which more food was distributed for relief than at any other time in the history of this country.

Perhaps we should not expect any material change to take place under the circumstances. After all, the free distribution of food does not alter the dietary habits of people, except perhaps in wartime when they are compelled to alter them. Except for surplus commodity dis-

tribution which was introduced later, food distributed for relief was obtained largely from products available in the immediate vicinity, which families had learned to depend upon for their subsistence. In a democratic society even those on relief are permitted to select largely what they want; which is not always what they need most. There is little doubt, however, that food relief activities did much to prevent serious problems of malnutrition, particularly in children.

The latest significant decrease in pellagra mortality began in 1937 and continued at a nearly even downward rate of about 5 per cent a year (of the 1928 figure); resulting in an all time low of 5.1 per 100,000 in 1940.

The reduction in 1937 may be due, in part at least, to an increase in the amount of yeast distributed. That was the year of the Ohio-Mississippi flood, the most devastating deluge of record in this country. Large sums of money were made available that year to the American Red Cross for relief work. Part of this was used for the purchase and distribution of a quantity of yeast; much more than in the immediate preceding years. Other agencies also distributed some at that time.

The reduction since 1937 is probably the result of the widespread use of nicotinic acid (niacin),[3] which was first used by Elvehjem[4] that year for the treatment of canine black tongue. Spies[5] and Fouts[6] separately reported its use in treating human pellagra in November, 1937. Smith[7] and his associates reported its use in December of the same year. Nicotinic acid became generally available to the medical profession the latter half of 1938. It was not used extensively until 1939. It has without doubt contributed materially to the continued decrease in pellagra death rates since its introduction. Spies[8] reports having treated a large number of cases without a single fatality.

It is evident that various factors have contributed to the marked and continued reduction in pellagra mortality since 1928. None of them has played a more important role than brewers' yeast.

Low mortality rates should, however, not always be accepted as evidence of a corresponding low morbidity rate of a given disease. The incidence may be fairly high even though the mortality rate is low. That applies particularly to pellagra. It will continue as a public health problem until an adequate diet is within the reach of all individuals and families who are potential victims of the disease.

The incidence of pellagra was estimated by Goldberger[9] at about 33 cases for every death reported from the disease. This estimate was made many years ago when the diagnosis was based largely on cutaneous symptoms. Since the disease is now recognized at an earlier stage, and the fatality rate is much lower, with the introduction of brewers' yeast and nicotinic acid, that ratio may no longer apply. Sebrell[10] believes that the number of active cases per death is somewhat higher at the present time. About 2,000 deaths were reported in 1940 and it would seem that an estimate of 50 cases for every death reported is not too high. The problem is far from solved even though the death rate is low.

Nicotinic acid or the amide is without doubt the most effective therapeutic measure available for pellagra, particularly in the advanced stages. Many of the latter would terminate fatally without it. But however valuable, it cannot take the place of essential foods. Unless treatment with nicotinic acid is followed with a diet which contains other factors of the vitamin B complex, disturbing symptoms, not directly related to the disease, may develop. Elvehjem,[11] who introduced nicotinic acid, speaks of it as an emergency measure which should be used as such in the treatment of pellagra. It must be associated with a nutritious diet or with brewers' yeast which is a food in itself as well as a valuable pellagra preventive.

Widespread use of flour fortified with nicotinic acid and thiamine as recommended by the Food and Nutrition Board of the National Research Council may influence somewhat the pellagra incidence in the years ahead. But, even if such a product may help somewhat, the disease cannot be brought under complete control without an adequate diet.

It must also be recognized that nicotinic acid cannot be administered as such except under the direction of a physician. Its successful use depends on accurate diagnosis, adequate dosage and proper methods of administration. These can only be determined by a physician on an individual case basis. The synthetic product cannot be distributed as such by public health agencies for use by the masses as can be done safely with brewers' yeast or fortified foods.

SUMMARY

(1) The foregoing analysis of statistical data represents, we believe, a fair interpretation of

the present status of the pellagra problem in this country and the factors that have influenced the mortality rates in recent years. The 1940 death rate from this disease is 77 per cent below the 1928 rate, which is the highest of record.

(2) The widespread use of brewers' yeast, the promotion of gardening, the introduction of nicotinic acid, and the educational work related to these projects, have been largely responsible for this reduction. Brewers' yeast has and will continue to play an important role in this program.

(3) The Federal food relief program introduced in 1933 has not materially influenced the pellagra death rate; although it no doubt prevented serious problems of malnutrition, particularly in children.

(4) Nicotinic acid (niacin) became available to the medical profession the latter part of 1938 and has contributed materially to a lower pellagra mortality since that time. It cannot, however, be distributed freely as such by public health agencies for use by the masses as can be done safely with brewers' yeast. It can only be prescribed by physicians on an individual case basis.

(5) Advanced cases of pellagra are far less common than they were a few years ago although milder forms and subclinical types of the disease are still very common. The problem cannot be brought under complete control until an adequate diet is within the reach of all potential victims of this malady.

(6) There are indications that 1928 may represent an important landmark in the history of pellagra in this country. It marks the end of a period of rapidly increasing death rates and the beginning of a marked decrease in these rates until the disease no longer ranks at present as an important cause of death.

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MELANOSIS COLI*

A REVIEW OF A TYPICAL CASE

By J. H. Dodson, M.D., F.A.C.S.
Mobile, Alabama

Melanosis coli may be defined as a condition in which there is a harmless deposition of brown to dark black pigment into the mucous membrane of the lower bowel. Historically, the condition was first recognized by Cruveilhier[1] in 1829 and subsequently received its name at the hand of Virchow.[2]

Actually the pigmentation is seldom seen to be uniformly distributed throughout the colon as the name implies, but is usually more intense in the sigmoid and rectum. Therefore, it would seem that the terminology of Bacon and Schefler[3] would be preferable, melanosis proctocoli. These writers declare that any portion of the colon from the ileocecal valve to the anorectal line may become pigmented and that this pigmentation may either be evenly distributed over large areas or else may be of patchy distribution. The latter state was of much more common occurrence. Bockus, *et al.*,[4] found the pigmentation to be more intense in the rectum, usually just inside the anal sphincter. In most of their patients the color of the colon was observed to become progressively of less intensity the higher the examination of the sigmoid was carried. Stewart and Hickman,[5] together with many other writers, are of the opinion that the discoloration is most pronounced in the cecum and ascending colon. Synnott[6] states that the rectum and lower sigmoid are rarely if ever involved. On the basis of this disagreement, it would apparently be unwise to say that the condition is rigidly restricted to specific portions of the colon.

Grossly, the rectum and sigmoid when viewed through the proctoscope show polyhedral or oval islands of mahogany brown, grayish brown or dark black coloration. Between these islands run fine unpigmented lines which are apparently

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superimposed along the course of the blood vessels of the mucosa. To the periphery of the affected zone, there are islands which seem to be less involved and give a lighter, mottled nutmeg appearance. According to Zobel and Susnow,[7] the involved area has been compared to snake skin, crocodile hide and tiger skin. This is quite accurate when it is kept in mind that melanosis coli typically involves no deviation from the characteristic smooth, slick appearance of the normal mucous membranes. The only pathologic change which has been recognized to date is the melanotic discoloration.

Microscopically, the melanin-like pigment granules are found usually in the tunica propria, although in advanced stages they may be found scattered throughout the muscularis mucosae (Zobel and Susnow).[7] The pigment is usually incorporated in the cytoplasm of large mononuclear phagocytic cells, although a few granules may be found free. There have been no reports of the pigment's occurring in the cells of the epithelium.

There are many varied and confusing hypotheses as regards the source and nature of the pigment of melanosis coli. (1) Gant[8] believes that it is hemochromatosis of the rectum and colon. He holds that the pigment responsible for the condition may be either endogenous or exogenous, being derived in the latter case from the inhalation or ingestion of colored dust or metallic poisons. (2) Lynch[9] maintains that the discoloration is due to a disturbance of the chromogenic function of the liver which is bacterial in origin. (3) Synnott[6] says that the metabolic pigment, melanin, is formed as part of a definite syndrome from other material already present in the rectum and colon. (4) McFarland[10] attributed the condition to specific enzymic activity originating in the cecum and acting upon the intercellular substance of the stroma of the colonic and rectal mucosa. (5) Solger[11] (according to McFarland)[10] postulated that the pigment was derived from blood chromatin when there was stasis in the intestinal blood vessels. (6) Lignac[12] (Zobel and Susnow)[7] has proposed hemorrhage into the intestine with subsequent bacterial action as the causative factors. (7) Pick[13] said that the melanin of melanosis originates from the aromatic albumin disintegration products of the large intestine, indol and skatol, under the influence of an oxidative ferment resembling tyrosinase, produced by the connective tissue cells of the mucosa. (8) Laidlow[14] has shown by means of the dopa reaction that the pigmented cells are definitely not of the true melanin producing (melanoblast) variety and he feels (from Bockus, *et alii*[4]) that the pigment is probably derived from ingested foodstuffs and is then phagocytosed by the cells of the intestine.

In recent years the etiology of melanosis coli has become more firmly established. Chronic constipation had long been suspected as the primary causative agent for the condition, but it was not until 1928 that Bartle[15] pointed out the importance of prolonged and usually daily medication with anthracene laxatives. Cascara sagrada, rhubarb, aloes, frangula, aloin, and senna are also occasionally mentioned as the offenders. Despite the failure of Corwin[16] to produce melanosis of the rectum and colon experimentally in dogs by long standing dosage of cascara sagrada, the preponderance of positive histories of the use of these drugs in melanosis patients appears to be conclusive evidence of their being at fault in the production of the condition. Acceptance of this factor would in turn point to the acceptance of the explanation of Bockus, *et alii*[4]) as to the source and nature of the pigment. In their words,

> "It seems highly probable that the anthracene laxatives either contain a pigment or elaborate a pigment within the colon which is phagocytosed by the deep mucosal cells causing Melanosis coli."

With a few exceptions, most writers are of the opinion that melanosis coli in itself is of no harmful significance. It is uncommon to find evidence of inflammatory reaction in the involved bowel. Furthermore it should be taken into consideration that in cases of prolonged constipation there are characteristically other symptoms, many of which are vague and confusing, which may erroneously suggest that the melanosis is the responsible factor. Melanosis coli may, however, exist in patients who show no other manifestations of disorder aside from chronic constipation. Invariably, stasis of the intestinal tract precedes the melanosis and should, therefore, be considered a promoting rather than a resulting factor. Following relief from constipation and discontinuance of the offending drugs, the discoloration will usually, but not always, disappear.

ABSTRACT OF A TYPICAL CASE

M., a forty-five year old housewife, was first seen on November 26, 1934. Her past history revealed that in early life she had suffered from typhoid fever followed by a severe colitis which had lasted for several years and eventually cleared up. Much mucus and blood had been passed. Many years later, she became severely constipated and required daily use of laxatives, cascara sagrada being used.

In 1934, she began to complain of perianal itching and underwent a violent attack of vomiting. On proctoscopic examination, I found typical melanotic discoloration of the rectocolonic mucosa, extending as far as could be visualized with the sigmoidoscope. There was an anal ulcer at the left posterior quadrant which caused considerable discomfort and produced an irritable sphincter. No tumors were present. At this time I suggested discontinuation of the cascara.

The patient moved to another state and I did not see her again for six years. During this time she had been examined and treated by several physicians who, believing the condition to be an evidence of malignancy, had given her an unfavorable prognosis. As a result of this, she became greatly depressed.

Upon her return to this city in 1940, the discoloration was about the same as when first seen and the ulcer previously mentioned was still present. In April of this year, I excised the ulcer and normal convalescence followed. To date, the melanosis is still present but considerably less marked.

The patient at present is of relatively slight build. Her life has been an endless sequence of many such disorders as an ovarian cyst and fibroid tumor (removed in 1915), sebaceous cysts about the eyes, headaches and sinusitis. She has been under severe mental strain, having experienced many major troubles, notably the loss of her husband in 1941.

COMMENT

Melanosis coli is one of the most dramatic and alarming conditions revealed by proctoscopy. It may easily be mistaken for a malignancy and this diagnosis brings about great worry and despondency not only to the patient but to the members of the family. Such worry may naturally be expected to aggravate the existing constipation. In the absence of palpable masses and with the securing of a positive history of chronic constipation and usage of anthracene drugs, melanotic discoloration of any part of the lower bowel should suggest melanosis. Discontinuation of the particular laxative, careful examination of the diet, institution of a regular routine in daily life and freeing of the patient from unnecessary worry over the condition are sound therapeutic measures. Even so, the persistence of the melanosis after the constipation and other disorders have cleared up, should not be cause for alarm.

SUMMARY

(1) In melanosis coli there is a deposition of brown to dark black pigment into the mucosa of the lower bowel.

(2) Available evidence points to chronic constipation and prolonged usage of anthracene laxatives as the etiologic factors of the condition. It is recognized that other predisposing factors may exist.

(3) Institution of sound therapeutic measures, chiefly the discontinuation of the laxative in use, will usually cause a gradual disappearance of the discoloration.

(4) A typical case has been presented.

(5) Melanosis coli, although oftentimes accompanied by other disorders, is apparently a harmless condition in itself.

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A HOCKEY-STICK INCISION FOR REMOVAL OF THE COCCYX*

By G. T. Tyler, Jr., M.D.
Greenville, South Carolina

For removing the coccyx, several incisions have been used. The most frequently employed is the mid-line incision, over the bone or over a part of it. While excision is easily accomplished, closure is difficult. The skin edges are united, but they cannot be easily retained in the depression between the buttocks. To obviate this difficulty, Lahey has devised a method in which each skin flap is held in place by a mattress suture including the deeper tissues of the opposite side close to the mid-line. Several of these

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sutures alternating on one side and the other secure the skin in its natural depression.

I have used a U-shaped incision, the arms extending toward the anus. This does not give good exposure, although the wound easily closed.

Recently I employed a hockey-stick incision, the short arm transverse, just above the articulation with the sacrum. The long arm, over the fleshy part of the buttock, can be made as long as required for removing the coccyx. Closure is easy, the skin flaps falling naturally into position. Experience with this incision has been satisfactory. I recommend it to the surgical profession.

EFFECT OF ANESTHESIA UPON CHEMOTHERAPY WITH DERIVATIVES OF SULFONIC ACID*

By JOHN ADRIANI, M.D.

and

CORNELIA ST. ROMAIN, M.D.
New Orleans, Louisiana

Patients who receive chemotherapy with various aromatic and heterocyclic derivatives of sulfonic acid frequently come to surgery and require anesthesia. The choice and method of administration of anesthetic drugs in these cases merit special consideration for at least two reasons: first, patients requiring this form of therapy have acute illnesses which are as a rule complicated by fever, sepsis, anemias, and various biochemical and physiologic disturbances; secondly, sulfones have been known to produce systemic and toxic changes which may be enhanced by anesthetic drugs. Only the relationship of the anesthetic drugs to the systemic and toxic effects of the sulfones will be considered in this discussion.

Toxic responses exhibited by sulfones are many but only a few require consideration from the standpoint of anesthesia. Most important are central nervous system disturbances. These are manifested by nausea, vomiting, cortical depression, and symptoms of anoxia. Of almost equal importance is the question of conversion of hemoglobin to non-oxygen-carrying pigments. Toxic effects upon the liver and kidney are frequently seen and cannot be disregarded.

Marshall and associates,[1] Kohn-Richards,[2] and others have demonstrated a depression of portions of the central nervous system by sulfanilamide and sulfapyridine. From animal experiments there is evidence of a summation of a depressant action between sulfones and anesthetic drugs. Adriani[3] reported a decreased tolerance of albino rats treated with 0.5 to 1 gm. sulfanilamide per kilo per day for three days to certain anesthetic drugs. The responses to gaseous and volatile anesthetics (ether, chloroform, nitrous oxide and cyclopropane) were not different in treated rats and controls. On the other hand, certain barbiturates produced unusual reactions. Subanesthetic doses of the ultra-short-acting barbiturates, "pentothal" and "evipal," injected intraperitoneally, became anesthetic while anesthetic doses became lethal. Similar responses were obtained with the short-acting barbiturates, pentobarbital and "amytal." The responses to tribromethanol solutions also injected intraperitoneally were similar in both treated and untreated rats. The enhancement of barbiturate narcosis was less intense with smaller doses of sulfanilamide and was absent when the dose was less than 0.25 gram per kilo. Blood sulfanilamide levels were not determined in these experiments. At that time it was suggested that the combination of barbiturates with sulfanilamide might be unwise in human therapy. Subsequent to the publication of these experiments, three dogs fed 0.25 gram of sulfanilamide per kilo per day for three days were anesthetized with intravenously - administered sodium "pentothal".[4] The induction time, duration of hypnosis, and depth of anesthesia were apparently similar to those observed in the same animals seven days previous to their treatment with sulfanilamide. No blood sulfanilamide levels were determined nor was any other barbiturate used in these experiments. Lorhan, Gretchen, Guernsey and Pugh[5] using "pentothal" with sulfanilamide in albino rats obtained results similar to those of Adriani. Sulfanilamide in doses less than 0.3 gram per kilo did not increase the lethal dose of "pentothal," but toxic effects were noted when the dose was increased to 0.6 gram per kilo. Kohn-Richards[2] observed that small hypnotic doses of such depressant drugs as urethane and "nembutal" inhibited convulsions and saved the lives of rabbits and dogs which were given large doses of sulfapyridine. However, hypnotic doses were lethal with this combination. This worker believes sulfapyri-

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*Department of Anesthesia, Charity Hospital of Louisiana at New Orleans, and Department of Surgery, School of Medicine, Louisiana State University, New Orleans, Louisiana.

dine exerts a biphasic action on the central nervous system. The first action, one of stimulation, is characterized by nausea, vomiting, convulsions, et cetera. The second action is one of depression. The secondary depressant effect, coupled with the hypnotic effect of urethane or "nembutal," resulted in a summation of action and death of the animal when large doses of sedatives were used. This summation of hypnosis was easily antagonized by picrotoxin. Similar results were obtained when sulfanilamide was combined with pentobarbital in rats, dogs, and rabbits. Sulfathiazole behaved similarly. Lamson and co-workers[6] studied the effects of anesthetic drugs upon mice treated with sulfanilamide, sulfapyridine, sulfathiazole, sulfathiazine, and N-acetyl sulfanilamide. In their experiments a shorter interval was required to anesthetize treated mice with ether and chloroform than the untreated. The median anesthetic and median lethal doses of pentobarbital were reduced when combined with all these sulfones. Glaubach[7 8] observed an enhancement of the reactions of codeine, morphine, and papaverine by sulfapyridine in rats and rabbits.

Wood[9] has reported inhibition of the sulfanilamide action by esters of para-aminobenzoic acid. Bullowa and his co-workers[10] have observed that procaine, an ester of para-aminobenzoic acid, in a concentration of 0.0002 per cent inhibited the bacteriostatic action of sulfapyridine *in vitro* in fluid aspirated from the chest. This concentration of procaine was present in chest fluid when this form of anesthesia was used. Inhibition of the anesthetic action of procaine is not mentioned.

Reports of the clinical use of anesthetic and sedative drugs in combination with sulfones are appearing in the literature. Physicians have been cautious and have heeded the possible warning offered by this laboratory data. Lundy and his associates[11] who have been enthusiastic advocates of "pentothal" do not advise its use in conjunction with the sulfones on the basis of these experiments in animals. King and Moersch[12] reviewed the hospital records of eighteen lobar and bronchopneumonia patients. Sixteen of these were treated with sulfapyridine and two with sulfanilamide. All received therapeutic doses of pentobarbital, "amytal," phenobarbital, or "seconal" for purposes of sedation. These writers do not mention the frequency and size of individual doses in their report, but found no evidence of any untoward effects in reviewing their records except in one case. A subject, 27 years of age, who received a total of 225 grains of sulfanilamide over an unstated period of time after which he was given an oral dose of 6 grains of "amytal," lapsed into a deep sleep from which he could not be aroused for 18 hours. They say:

> "That this reaction was the result of the combined effect of these two drugs can be postulated but is difficult to prove."

Smith[18] reported the intravenous administration of sodium "pentothal" in amounts up to 0.5 gram to thirty wounded soldiers who had received sulfapyridine at various times with no untoward effects. All of this series of thirty cases do not necessarily indicate that the two drugs can be used in combination with absolute immunity since in nine of these a 1-gram dose of the sulfone was administered by vein during the twenty-four hours following the anesthesia; in nine, a 1-gram dose was given orally under similar circumstances; in four, the drug was given within three days after the anesthesia; and in eight, the drug was given in therapeutic amounts for several days preceding anesthesia. No definite details were mentioned regarding the exact responses of the patients to this combination.

The writers have reviewed the anesthesia records of forty-six patients receiving sulfanilamide, sulfapyridine, or sulfathiazole. They also analyzed the records of twenty other patients receiving sulfanilamide and sulfathiazole which they themselves anesthetized. Twenty-three of this total were anesthetized with cyclopropane; twenty-five with ether induced with nitrous oxide or ethylene; eleven with procaine used intraspinally or by infiltration; and five with intravenous sodium "pentothal." The chemotherapeutic agent was administered orally or intravenously in therapeutic doses over a period of two or more days up to the time of operation. Blood levels were determined in the greater number of cases. The subjects were adults treated for bacterial infections of various types who came to surgery for drainages of abcesses, excisions of infected tissue, et cetera. These anesthesias were all uneventful and did not differ radically from those ordinarily observed with the same agents and technics in untreated patients. The dose of sodium "pentothal" did not exceed 0.5 gram in any single case. The amount of this barbiturate necessary to affect adequate anesthesia often varies widely between individuals. Consequently one is unable to draw any conclusion about the summation effects in man from so small a series. However, the reactions

to the "pentothal" differed little from those ordinarily seen in untreated subjects.

Premedication for these sixty-six patients consisted of the usual therapeutic doses of morphine (1-6 to 1-4 gr.) and scopolamine (1-100 to 1-200 gr.) or atropine (1-150 to 1-200 gr.) administered one hour before induction. Eight patients also received either "seconal," phenobarbital, or pentobarbital in therapeutic doses in conjunction with the morphine or scopolamine or atropine. No unusual circulatory, respiratory, or neurological manifestations were observed prior to induction of anesthesia.

Attention to possible untoward effects from anesthesia in combination with sulfones was first occasioned by pigmentation of cyanosis accompanying sulfanilamide therapy. Anoxia from a reduction in the oxygen-carrying power of the blood due to the conversion of the hemoglobin to non-oxygen-carrying pigments was feared. Although controversy has arisen regarding the nature of those pigments formed by sulfanilamide and other sulfones, Marshall and Walzl[14] failed to detect any marked changes in the oxygen-carrying power of blood in seven cases of sulfanilamide therapy. Long and Bliss[15] agree with these workers. Adriani[4] determined the oxygen content and capacity in specimens of arterial blood obtained during cyclopropane anesthesia in three patients receiving sulfanilamide who exhibited marked cyanosis as a result of the therapy. All three patients had an average content of 17 volumes per cent and the minimum saturation was 97 per cent. These oxygen values are similar to those found in a series of untreated obstetrical patients during anesthesia with cyclopropane.[16]

Related to the possible inactivation of oxygen-carrying power of hemoglobin and the attendant anoxemia are the symptoms of anoxia observed in pilots receiving sulfanilamide. Mackie[17] has reported such findings and says that sulfanilamide or its derivatives lowers an aviator's ceiling or tolerance to anoxia by about 5,000 feet. Rook[18] also mentions similar observations. Emerson, Northrup and Van Liere,[19] in seeking data on this phase of therapy, subjected mice treated with single doses of sulfanilamide and sulfapyridine to varying degrees of anoxia. No increased susceptibility to anoxia was noted. Adriani[3] also found no apparent increased susceptibility to anoxia or carbon dioxide excess for short periods in rats receiving sulfanilamide. The writers noted a rise in systolic blood pressure in three general anesthesias with ether and in four with cyclopropane of the twenty aforementioned cases which they anesthetized. This rise is similar to that seen with partial anoxemia or carbon dioxide excess during inhalation anesthesia. Inasmuch as many factors present during clinical anesthesia may elevate blood pressure and no other symptoms of oxygen lack accompanied this pressure rise, these signs were assumed not to be characteristic of general anesthesia combined with sulfone therapy.

The toxic effects of sulfones upon the kidney and liver have been the subject of numerous clinical reports. Anesthetic drugs, particularly the volatile liquids and non-volatile agents, decrease liver function.[20] Lorhan and co-workers[21] were unable to detect microscopic changes in livers of rats treated with sulfanilamide and anesthetized with "pentothal." This, of course, does not necessarily imply unimpaired function. Ottenberg[22] has reported hepatitis following the administration of tribromethyl alcohol ("avertin") in a patient receiving sulfanilamide. Difficult as it may be to prove that the hepatitis was the result of the combination of drugs, it is possible that this is more than mere coincidence. The role of the liver in detoxification and elimination of drugs must be emphasized. Volatile anesthetic drugs are chemically inert in the body and are therefore almost entirely eliminated by way of the lungs and kidneys. Non-volatile drugs, such as morphine, barbiturates, and "avertin," are eliminated either unchanged by the kidney or are inactivated by the liver, and to a lesser extent by other tissues, by means of some biochemical mechanism.[23] Impaired function of liver and kidney, in the case of non-volatile drugs, prolongs anesthesia or hypnosis.

Evidence exists, then, particularly in the lower animals, of possible summation effects of the sulfones and the sedative and anesthetic drugs. These responses are apparently less pronounced or absent in man. The lack of controls and the paucity of clinical reports do not allow a ready dismissal of this problem.

Evaluation of the effects of one drug alone is not simple, but when a combination of several

drugs must be considered, as in this problem, evaluation is still more complex. One must admit that too often data from animal experiments are not applicable to man. Species differences, variation in dosages of drugs, mode of administration, absorption, elimination, and the like, are all factors responsible for dissimilarities. In this problem where the issues concerned are with responses of the nervous system, differences in development between various species must be considered. Impressions may be those of no summation in man, but until more clinical data accumulate, caution should be exercised particularly in the use of non-volatile substances.

Controllable methods of administration of anesthetic should be preferred to the non-controllable. Barbiturates for intravenous anesthesia, such as "evipal" and "pentothal," are non-controllable since the induction dose must often be administered at one time and cannot be retrieved once it is administered. Similar remarks are applicable to "avertin" and other drugs administered by rectum. The detoxification of "pentothal," even though rapid, may be only partial, so that degradation products remain in tissues for a time after the patient recovers.[24] These may be responsible for the postanesthetic somnolence seen with this drug. The use of "pentothal" in conjunction with the sulfones has been the subject of considerable discussion among enthusiastic users of the barbiturate. Modern anesthesia can provide an adequate number of safer procedures so that one may readily forego the use of the combination of sulfones and "pentothal," or other similarly used barbiturates.

Administration of volatile and gaseous drugs is readily controlled since the concentration is raised gradually and reduced quickly when necessary by dilution with non-anesthetic gases. The gaseous anesthetics, such as cyclopropane, ethylene, and nitrous oxide, have little effect upon the liver, kidney, and membranes of the respiratory tract, and metabolism. Anesthesia with them is preferred to that produced by the volatile liquids, such as ether, chloroform, or vinethene, which have a more decided effect upon metabolism and produce more pronounced systemic disturbances. Carbon dioxide combining power is lowered, blood glucose is increased, and kidney and liver function are decreased with these.

SUMMARY

Clinical studies indicate that the summation of action between anesthetic drugs and sulfones observed in animals is apparently slight or absent in man. The possibility of untoward effects between depressant drugs and sulfones must not be completely disregarded, however. Controllable methods of administration of anesthesia are preferred to the non-controllable types. Inhalation anesthesia is the most controllable type of anesthesia.

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SULFATHIAZOLE THERAPY IN VENEREAL DISEASE*

By ALBERT A. CREECY, M.D.
Newport News, Virginia
and
H. L. SWITKES, M.D.
Kecoughton, Virginia

During a four-month period in 1940-1941, opportunity was afforded to observe and treat one hundred and seventeen cases hospitalized on a venereal service. The cases were not selected and were admitted simply on presumptive evidence of venereal infection. The patients were all young white males, ranging in age from 17 to 32 years. They were hospitalized under ideal conditions with adequate facilities for rest, while under treatment, and with no possibility of retarding cure by alcoholic intake or sexual relations. Constant clinical observation at the bedside could be supplemented with necessary laboratory examinations to detect and control reactions and to watch the progress of the patient. Between eight and twelve months later, questionnaires were sent to all patients, and fifty-seven of the one hundred and seventeen responded, which may be considered a good percentage for this type of case. Seventeen could not be found and forty-three did not reply. One hundred and seven received sulfathiazole during hospitalization without serious immediate complication and of the fifty-seven replies, none had evidence of any later complications.

In the group there were seventy-one cases of gonorrhea, fifty-nine being diagnosed as acute anterior urethritis and twelve as chronic anteroposterior urethritis. There were five cases of syphilis, ten cases of chancroid and five in a miscellaneous group made up of conditions such as herpes, abrasions, pustules and eczema. Twenty-six cases were considered as nonspecific urethritis.

ACUTE GONORRHEA

The fifty-nine acute cases were diagnosed by the presence of active discharge, smears containing intracellular gram-negative diplococci, and in those cases where possible, by culture as advocated by Carpenter.[8] Lewis[12] stresses the value of clinical signs and smears, and cites differences up to 25 per cent in different observers with cultures in the same group of patients. Stockwell,[16] although using both cultures and smears, continues to place more confidence in the latter. Sulfathiazole was administered to this group and four cases were considered failures. Ninety-three per cent were considered cured. Criteria for cure were absence of discharge and symptoms, two or more negative prostatic and urethral smears, clear two-glass test and negative culture if done. All discharge ceased in most cases on the second or third day, but the average for the entire group was five days and the average time of hospitalization was eighteen days. The first cases received were given sulfathiazole 1 gram, four times daily for six to eight days. This is in accordance with the dosage recommended by the American Neisserian Medical Society in a special brochure[6] outlining the recommendations for treatment of gonorrhea. Lloyd and Erskine[13] advocated 4 grams per day for five days. Culp[9] recommended 1 gram every six hours for an average of 9.3 days, and Knight, Uhle and La Towsky[10] used 3 grams daily for eight days with 96 per cent cured. Later cases in our series received a large initial dose of 4 grams followed by 1 gram every four hours for three days and 1 gram four times daily for four days. This is similar to the schedule as outlined by Burkholder and Bang,[5] who believe there is less tendency to develop a resistant strain of organism if a large initial dose is given. Stockwell,[16] also, prefers a large initial dose, 10 grams in the first twenty-four hours in divided doses, reducing this from two to five grams daily for three to ten days. In still another group, we gave 1 gram each hour for five doses and then ½ gram every four hours for six to eight days. The two groups receiving the large initial dose in the first twenty-four hours became discharge free sooner and had fewer hospital days than the group receiving small uniform doses throughout. The smallest total dose was 13 grams, and the largest was 68 grams. Fluid intake was not restricted, and the large doses were given with adequate amounts of water to minimize the possibility of urolithiasis medicamentosa. Urinalyses were done regularly, watching particularly for red blood cells and bile. Blood counts were done twice each week and blood levels were done in those cases receiving large amounts. These levels ranged from 2 mg. to 6.65 mg. per cent and did not seem to have much relative bearing on the course of the disease. Five patients complained of headache, three of nausea and one had conjunctivitis. There were no cases of jaundice, leukopenia or anemia.

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There were none of the usual complications which formerly accompanied gonorrhea, and only one case of epididymitis was encountered, and this was present on admission. In three of the cases which failed to respond, we instituted treatment by local injections supplemented with fever therapy as advocated by Ballenger, Elder and McDonald.[2] Twenty-seven cases answered questionnaires after a period of eight to twelve months, and there had been no recurrence of discharge or the disease, and no late untoward reactions from the drug. Twenty-one of the twenty-seven admitted further sexual exposure, and one of these apparently contracted the disease anew.

CHRONIC GONORRHEA

Twelve cases of chronic anteroposterior urethritis were treated with ten cases or 84 per cent cured and two failures. Several cases had received sulfanilamide with indifferent results prior to admission. The cases were individualized as regards dosage, but again those receiving a large initial dose of 2, 3, or 4 grams or 1 gram every hour for five doses followed by 0.5 gram every four hours for several days responded better than those receiving the smaller uniform doses. The discharge ceased on the average in 6.4 days, and the average number of hospital days was 21.5. The smallest dose given was 9 grams, the largest 37 grams and the average 24 grams. In a case which was not progressing, fever therapy was instituted with administration of the drug before and after with very favorable results. Blood levels ranged from 1.33 mg. per cent to 5.70 mg. per cent. The same criteria as before were essential for cure. Reactions to the drug were minor, including headache, conjunctivitis, giant angioneurotic edema in a case which had previously been sensitive to sulfanilamide, and aggravation of a psychosis in a mentally incompetent patient. It is interesting to note that a patient developed appendicitis while receiving the drug and an inflamed appendix was removed, and so reported pathologically. Five patients responded to our questionnaire and had noticed no evidence of recurrence and no symptoms referable to the drug.

NONSPECIFIC URETHRITIS

We considered all cases having any type of urethral discharge without the presence of gram-negative intracellular diplococci in the urethral or prostatic smear as nonspecific urethritides. We had twenty-six cases of this type. Of these, twenty-one had a frank purulent discharge while four gave a history of one or two drops from the urethra after exposure, while one patient denied any sexual exposure. Some of these twenty-one frankly purulent cases may have had gonorrhea in the past or at the immediate time, but we were unable to prove them so. Recent publications have shown that repeated cultures may find up to 50 per cent positives for gonorrhea in those cases that have had negative smears from urethral discharges and after prostatic massage. We did not do cultures on all these cases. We treated all of our cases of frank discharge as if they were acute gonorrhea.

We treated most of our cases (12) with sulfathiazole in two ways, that is: with large doses, grams 3 or 4 initially, then gram 1 four times daily for two days, then gram 1 four times daily for four or five days, using a total of thirty-one to thirty-six grams in a seven or eight-day period. Other cases were treated with smaller doses of sulfathiazole, that is: grains 7½-15 initially, and grains 7½ every four hours for six doses, and grains 7½ four times daily for five days for a total of 14 grams (4 cases). Six cases were treated with sulfanilamide grams 1 four times daily for two days, then grains 10 four times daily for six days and two cases were, in addition, given sulfapyridine 1 gram four times daily for three days. These cases were those that remained in the hospital longest, thirty-one, thirty-six, forty-eight and sixteen days respectively, and were hardest to clear up although three were followed up with sulfathiazole and sulfapyridine, and local applications after the sulfanilamide failures.

The average number of days before the urethral discharges stopped permanently was eleven days, while the average number of days of hospitalization was twenty. We found that those cases receiving the large doses of sulfathiazole (30-33 grams in a week) responded better, and their prostatic smears and urinalyses were negative at an earlier date than those receiving small doses. There were no complications with the sulfathiazole in this group, while there was one case of a maculopapular eruption in a case given sulfapyridine after sulfanilamide failure. This cleared up as soon as the drug was stopped.

Criteria of cure in our cases were a clinical cure in addition to three negative prostatic smears, done about two or three days apart after the urethral discharge stopped, and at least 2 clear two-glass urine tests.

In our treatment, fluids were unlimited, the patients were bed patients or semi-bed patients

during the acute discharging stage, and were seen at least once daily by the attending physician who observed them as to any skin lesion, evidence of anemia or jaundice, fever, subjective symptoms such as headache, dizziness, nausea or vomiting. None of these was evident in this group to any noticeable degree outside of the one case of dermatitis due to sulfapyridine. Blood counts and urinalyses were done on all our cases at least twice weekly. We found no blood dyscrasias.

We received sixteen replies to our questionnaire in the nonspecific urethritis group. All the replies were negative in answer to all our questions in respect to recurrence, any illness, or symptoms referable to the drug. In response to the question as to sex exposure since the last infection, eight answered in the affirmative and three in the negative.

CHANCROID

Several years ago when the sulfanilamide era began, one of us empirically administered sulfanilamide to patients with chancroid, and the results were most gratifying. Pain and discharge ceased almost immediately, the base of the ulcers assumed a dry, harmless appearance and progressed rapidly to complete healing. Complicating adenitis was rare. Several observers, particularly in England, reported favorably on this type of treatment. In our present series, ten cases of chancroid were treated. They were clinically typical of chancroid. All cases had one or more negative dark field examinations, and all had negative Frei tests. All had Wassermann tests which were negative. Smears of tissue for the streptobacillus of Ducrey were done with indifferent success which confirms the opinion in Cabot's[7] "Urology" that the diagnosis can best be made by the clinical picture and by exclusion. The intradermal test of Ito-Reenstierna was done in five cases with negative results. This may be due to the fact that in some instances the test is not positive unless the disease has been present for five weeks, and in this series the drug was effective before that time had elapsed. Only one case had progressed to bubo formation and the treatment instituted apparently aborted this frequent complication in the others. Sulfathiazole was given in large doses, that is, three or four grams initially and one gram or 0.5 gram every four hours for several days. Two cases received local applications of sulfanilamide powder, but responded no sooner than did the others. All ten cases were cured. Pain and purulent discharge ceased quickly, the average number of days for healing was eight and the average date for discharge from the hospital was the fifteenth day. This corresponds to results of Schwarz and Freeman, whose average for complete healing was 15.7 days using sulfanilamide. Their average in control cases not treated with sulfanilamide was thirty-two days. The one case in our series with unruptured bubo complicating the chancroidal ulcers had three negative Wassermanns, three negative dark field examinations and received a total of 37 grams of sulfathiazole over a period of sixteen days. He was considered healed in ten days, but was not discharged from the hospital for twenty-four days. The blood levels ranged from 0.95 mg. per cent to 3.00 mg. per cent. No reactions were noted. Three of the ten responded to questionnaires and had experienced no late complications either from the disease or the drug.

DISCUSSION

A comparison of four sulfonamide drugs currently used indicates that in acute and chronic gonorrhea, sulfathiazole is superior to sulfanilamide and sulfapyridine. It is more effective, better tolerated and there is less danger of toxic reaction. As regards dosage, it is thought that ambulant cases should continue to receive conservative amounts, but large doses are definitely preferred in those cases which can be closely observed and hospitalized. Although thorough laboratory tests may be made routinely, it is felt that intelligent clinical observation can lessen necessity for some of these to a great extent. Blood sulfathiazole levels in this series were interesting, but not of great significance. There were no changes in blood counts and as long as water was taken in large amounts, there were no red blood cells in the urine or signs of acetylated forms precipitating in the tubules, pelves or ureters. Compared with sulfadiazine, sulfathiazole may be slightly more toxic as its acetylated derivative is not so soluble, but as regards results, it is equally effective. Satterthwaite, Hill and Young [14] obtained 86 per cent cures in fifty cases of gonorrhea, using sulfadiazine, and LaTowsky, Baker, Knight and Uhle[11] reported 93 per cent cured using the same drug. Experimentally Bang and Bang[3] found both drugs to have the same effectiveness in gonococcal infections of the chorio-allantoic membrane of the chick.

The apparently large number of cases of nonspecific urethritis and prostatitis is explained by the fact that the cases were accepted for observation if they had a history of any discharge

whatsoever. It is also interesting to conjecture whether some of these patients may have taken sulfonamides independently outside for what was acute gonorrhea, but would not reveal this fact when admitted to the hospital. At any rate sulfathiazole can be considered of value in some types of this condition, but does not give the uniformly good results that it does in gonorrhea.

Sulfathiazole is preferable to sulfanilamide in chancroid because it is better tolerated, although the effectiveness of both drugs seems to be about equal. Local cleanliness for good hygiene is advised, but the necessity for painful antiseptic washes and cauterization with strong acids no longer exists. The complication of adenopathy can usually be eliminated if the disease is seen early and sulfathiazole started promptly. Positive diagnosis and exclusion of syphilis, lymphopathia venereum and other diseases is desirable, but the response of chancroid to sulfathiazole is so constant that it can almost be considered a therapeutic test.

SUMMARY

In a series of one hundred and seventeen cases, one hundred and seven received sulfathiazole. In acute gonorrhea, 93 per cent were considered cured, in chronic gonorrhea 84 per cent were considered cured, and in chancroid the effectiveness of cure was 100 per cent. The drug is also of considerable value in many cases of nonspecific urethritis and prostatitis. Careful clinical observation with laboratory controls kept reactions to a minimum. No serious reactions were encountered and those found consisted of nausea, headache, erythematous rash, angioneurotic edema and conjunctivitis. Large initial dosage was thought to be more effective than smaller amounts of the drug, and is the method of choice in those cases treated in hospitals.

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Veterans Hospital

Discussion follows paper of Drs. Colston and Satterthwaite, page 1012.

THE PREOPERATIVE USE OF SULFATHIAZOLE FOR THE PREVENTION OF POSTOPERATIVE COMPLICATIONS*

By J. A. CAMPBELL COLSTON

and

RICHARD W. SATTERTHWAITE

Baltimore, Maryland

Surgical operations upon the genito-urinary tract have always been especially susceptible to the hazards of infection because, primarily, in many of the cases in which surgical intervention is contemplated, infection is already present when the patient is first seen and in the second place, when the urinary tract is opened the necessity for providing adequate drainage for the urine inevitably provides an easy pathway for the ingress of micro-organisms. Certainly the danger of severe postoperative infection can be largely minimized by meticulous technic, careful attention to surgical detail, adequate drainage and the judicious use of local antiseptics. Nevertheless, in spite of all precautions, infection, whether it be intro-

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*From the Brady Urological Institute, Johns Hopkins Hospital, Baltimore, Maryland.

duced or result from the spread of organisms previously present to new areas opened up by the surgical procedure, has always been a hazard of much greater significance in urology than in any other field of surgery. While steady advances in technical methods and aftercare have progressively tended to reduce this menace, nevertheless infection has always been a factor which must be taken under serious consideration in all surgical procedures and especially those on the urinary organs. The infinite and painstaking research work which has been spent upon this problem is mute but eloquent testimony to the importance which surgeons and research workers alike have placed upon this factor. The introduction of any new technical or therapeutic procedure by which the incidence and severity of infection is lessened must therefore be of the utmost significance and certainly there are few who will not agree that the introduction of the sulfonamide group of chemical compounds has marked the opening of a new era in urology. These drugs have certainly afforded us the most effective method that we have yet had to combat postoperative infection and the dangerous complications which may arise as a result and as our experience and confidence have increased the sulfonamides have gradually displaced practically all other specific measures in the treatment of postoperative complications arising as a result of infection.[1]

As the excellent result of the treatment of postoperative infections by the sulfonamides became more and more obvious we were soon led to try to prevent, or at least attenuate, postoperative infection by the preoperative administration of these drugs. It seemed logical to assume that if many severe postoperative infections could be successfully treated, the onset of many complications could be prevented if a sufficient concentration of one of these drugs were present in the blood stream and in the tissues at the time of operation. By this means, it was hoped that sufficient bacteriocidal or at least bacteriostatic action might be present to prevent the growth and spread of organisms in the tissues opened by the surgical procedure or their propagation in the blood stream.

Since the introduction of sulfathiazole, the efficacy of the drug, its reactions, the indications and contraindications for its administration have been extensively reviewed in the literature. Although it has been used by many surgeons previous to operation, there has been, as yet, no comprehensive and comparative study carried out to evaluate the proper status of this drug as a preoperative prophylactic measure. Young, Hill and Semans[2] have reported their experiences with fourteen cases of plastic operations upon the genito-urinary tract in which sulfathiazole was administered prior to operation and it was their impression that in these cases healing occurred far more quickly and infection, and the formation of fistulae were far less likely to occur than in similar cases operated upon under the same conditions and by the same technic in which no preoperative sulfathiazole had been administered.

For the past eighteen months, since July, 1940, it has been our custom to administer one of the sulfonamide drugs for varying intervals of time preoperatively in every case in which infection of the urinary tract is present at the first examination or, if, at operation, opening of the urinary tract is contemplated. After several months' experience with cases treated by this method it seemed apparent that the incidence of postoperative complications and morbidity was very definitely reduced. The present study was undertaken to determine if this impression could be substantiated by a critical comparison of the postoperative course of a series of preoperatively treated cases with a control series of non-treated cases of similar type operated upon under essentially the same conditions.

Sulfathiazole has been the drug most commonly used and in this reported series no other sulfonamide compound was employed. Sulfapyridine was used in a small series of cases in small doses, but its use was soon discarded on account of the danger of renal complications. During the past few months, sulfadiazine has been extensively used with most satisfactory results and it may well be that this will prove to be the drug of choice, although the factor of its high cost must be considered.

In our series the amount of sulfathiazole administered preoperatively has varied considerably of necessity and it must be remembered that it has been our purpose to achieve a sufficiently high concentration of the drug, both in the blood stream and in the tissues at the time of operation to prevent the ingress and growth of organisms or to inhibit the propagation of those already present. At the same time, it was felt that the dosage should be sufficiently low to avoid the reactions from this drug which many observers have shown to occur with far greater frequency when large doses are used.

We also realized the potential dangers of a high blood level of the drug during the immediate postoperative period when, especially in debilitated or shocked patients, kidney function must be temporarily depressed so that the possibility of the deposition of crystals in the kidney parenchyma under such circumstances cannot be safely disregarded.

The temperature chart has been arbitrarily chosen as the best indication of postoperative morbidity and in addition to this index some of the more severe or unusual postoperative reactions will be briefly discussed. This presentation will undoubtedly be open to criticism on account of the fact that determinations of the sulfathiazole blood levels were not made and possibly further information of value might have been brought out had such studies been available. However, it has been our custom to carry out blood level determinations only in those cases in which serious infection is being combated or in which the response to chemotherapy has not been satisfactory.

In order to study the value of the preoperative administration of sulfathiazole under identical conditions and with the elimination of as many variable factors as possible in the preoperatively treated cases and the control series, this study has been limited entirely to those cases receiving spinal anesthesia. Pontocaine, 10 to 20 milligrams, was used in each case.

Method of Administration.—In the preoperatively treated cases, the amount of sulfathiazole administered has varied considerably while the period of preoperative treatment has ranged from one to seven days. The minimum dose was 2 grams and the maximum dose 4 grams per day. The average dosage was 3 grams per day and the average duration of therapy two and a half days prior to operation, including the morning of operation. It is our impression that 48 hours of preoperative therapy, including the morning of operation, at a dosage of 2-3 grams per day produces the maximum of protective effect with a minimum of toxicity and that preoperative treatment extending more than 48 hours is not necessary.

Since July 1, 1940, all operative cases have been divided into one of three groups: (1) sulfathiazole preoperatively alone; (2) sulfathiazole both pre- and postoperatively; (3) sulfathiazole not given during the pre- or postoperative course unless complications developed. There was no appreciable differences in the ages of the patients, in the type of operation or in the pre- and postoperative care of the patients comprising each group. In group 2, those receiving pre- and postoperative sulfathiazole, the incidence of reactions to the drug was sufficiently high to make it advisable to abandon this therapy as a routine procedure.

In the group receiving preoperative sulfathiazole as a prophylactic measure, during the immediate postoperative period of lowered resistance there were significant differences in the postoperative temperature reactions of the patients as compared with the group not receiving sulfathiazole preoperatively.

One hundred twelve patients received what we considered adequate preoperative sulfathiazole treatment. In two of these patients, temperature reactions, which were later proven to be due to sulfathiazole, occurred on the first and second days of the postoperative period, so that these two cases were excluded from the series. In each of these two cases, subsequent administration of sulfathiazole produced a temperature reaction identical to that which had occurred previously on the first two postoperative days.

Of the 110 remaining cases treated preoperatively, 39 cases (35 per cent) had a temperature of 100 or more on the first postoperative day; 20 cases (18 per cent) had a temperature of 100.5 or more; 14 cases (12 per cent) had a temperature of 101 or more; and in 3 cases (2.7 per cent) the temperature was 102 or more. There were no temperature elevations above 102.5. In the control group of 196 cases which were given no sulfathiazole previous to operation, 87 cases (44.3 per cent) had a temperature of 100 or more; 57 cases (29 per cent) had a temperature of 100.5 or more; 40 cases (20 per cent) had a temperature of 101 or more; and 14 cases (7 per cent) had a temperature of 102 or more. In 7 cases (3.6 per cent) there was a temperature of 102.5 or above (*Chart 1*).

It is thus readily seen that the postoperative temperature reaction on the first postoperative day was definitely lower in the series of cases treated preoperatively by sulfathiazole. On the second postoperative day, the difference in the temperature reaction between the two groups was essentially the same as that on the first day.

In the analysis of temperature reactions on the third day, the treated group showed a lower temperature than on the two previous days, but there were no temperature reactions above 102.5.

The treated group showed only three cases which reached a temperature of 102 and none above 102.5. In the control group, on the other hand, there were 24 cases (12 per cent) which had a temperature of 102 and in 11 cases (5.6 per cent) the temperature was 102.5 or more (*Chart 2*).

On the fourth day, in the preoperatively treated group, there were 37 cases (33 per cent) with a temperature of 100 or more. There were 19 cases (17 per cent) with a temperature of 100.5 or more; 10 cases (9 per cent) with a temperature of 101 or more; 1 case with a temperature of 102 and no cases with a temperature above 102.5. In the control group, 95 cases, (45 per cent) had a temperature of 100 or more; 60 cases (30 per cent) had a temperature of 100.5 or more; 38 cases (19 per cent) showed a temperature of 102 or more. This latter figure is eleven times that of the sulfathiazole treated group. In the control group, 8 cases (4 per cent) showed a temperature of 102.5 or more.

In these compilations of the temperature reactions, there is a source of error. Four patients in the sulfathiazole treated group and 31 patients in the control group received sulfathiazole during the first four postoperative days

A COMPARISON OF THE TEMPERATURE REACTIONS BETWEEN THE SULFATHIAZOLE TREATED PATIENTS AND THE CONTROL GROUP

	Temp. 100.0° or More		Temp. 100.5° or More		Temp. 101.0° or More		Temp. 102.0° or More		Temp. 102.5° or More	
	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent
FIRST DAY										
110 Preoperatively Treated Cases	39	35	20	18	14	12	3	2.7	None	
196 Untreated Control Cases	87	44.3	57	29	40	20	14	7	7	3.6
SECOND DAY										
110 Preoperatively Treated Cases	73	66	49	44.5	28	25.5	4	3.6	2	1.8
196 Untreated Control Cases	159	81	122	62	63	32	21	10.7	8	4

Chart 1

A COMPARISON OF THE TEMPERATURE REACTIONS BETWEEN THE SULFATHIAZOLE TREATED PATIENTS AND THE CONTROL GROUP

	Temp. 100.0° or More		Temp. 100.5° or More		Temp. 101.0° or More		Temp. 102.0° or More		Temp. 102.5° or More	
	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent
THIRD DAY										
110 Preoperatively Treated Cases	59	53	28	25.4	19	17	3	2.7	None	
196 Untreated Control Cases	138	69	93	47	69	30	24	12	11	5.6
FOURTH DAY										
110 Preoperatively Treated Cases	37	33	29	17	10	9	1		None	
196 Untreated Control Cases	95	45	60	30	38	19	22	11	8	4

Chart 2

due to development of upper respiratory infections, positive blood cultures or elevations in temperature to 103 or more, accompanied by chills.

When the series is broken down into specific operative groups, it is found that the preoperatively treated group has, in nearly all cases, lower temperature reactions. This difference is more marked in those cases in which the urine was infected prior to operation than in those cases with sterile urine and this is more marked when temperatures of 101 or more are compared (*Charts 3 to 6*).

In our previous experience, the incidence of upper respiratory infections after operations upon the genito-urinary tract carried out under spinal anesthesia has been from 4 to 6 per cent. In the control series, 196 cases, there were 12 cases which developed acute bronchitis or pneumonia. Of these 12 cases, each had definite signs of acute bronchitis, elevation in the white blood count, temperature to 102.5 or above and clinically was acutely ill. These symptoms and signs were definite on the second day and not later than the third postoperative day. Sulfathiazole therapy was promptly instituted in each case, thus preventing the development of frank consolidation in most cases (*Chart 7*).

However, in five cases, there was definite consolidation, as shown by x-ray and in two other cases the findings were questionable. In four cases death occurred. In two cases, death was

PERINEAL PROSTATECTOMIES, STERILE URINE

FIRST DAY

	Normal Temp.		Temp. 100.0° or More		Temp. 101.0° or More		Temp. 102.0° or More	
	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent
16 Preoperatively Treated Cases	10	62	6	38	3	18	None	
23 Untreated Control Cases	14	60	9	40	2	8	2	8
SECOND DAY								
16 Preoperatively Treated Cases	4	25	12	75	6	38	None	
23 Untreated Control Cases	8	34	15	65	3	13	1	4

Chart 3

PERINEAL PROSTATECTOMIES, STERILE URINE

THIRD DAY

	Normal Temp.		Temp. 100.0° or More		Temp. 101.0° or More		Temp. 102.0° or More	
	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent
16 Preoperatively Treated Cases	6	38	10	62	2	12	None	
23 Untreated Control Cases	14	60	9	43	4	17	None	
FOURTH DAY								
16 Preoperatively Treated Cases	14	87	2	13	None		None	
23 Untreated Control Cases	13	57	10	43	4	17	1	4

Chart 4

unquestionably due to the development of the pneumonia and in the other two cases it was a vital contributing factor.

In the sulfathiazole treated group, there were two cases which showed lung signs in the first four postoperative days. One of these cases had a temperature of 103 and a cough on the second postoperative day, but no evidence of

PERINEAL PROSTATECTOMIES, UNSTERILE URINE

FIRST DAY

	Normal Temp.		Temp. 100.0° or More		Temp. 100.5° or More		Temp. 101.0° or More		Temp. 102.0° or More	
	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent
27 Preoperatively Treated Cases	15	55	12	45	6	22	4	14	2	7
21 Untreated Control Cases	10	47	11	52	7	33	7	33	3	14

SECOND DAY

27 Preoperatively Treated Cases	7	25	20	75	16	59	11	40	2	7
21 Untreated Control Cases	1	4	20	96	16	75	7	33 1-3	3	14

Chart 5

PERINEAL PROSTATECTOMIES, UNSTERILE URINE

THIRD DAY

	Normal Temp.		Temp. 100.0° or More		Temp. 100.5° or More		Temp. 101.0° or More		Temp. 102.0° or More	
	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent
27 Preoperatively Treated Cases	6	27	21	78	10	40	7	25	2	7
21 Untreated Control Cases	5	25	16	75	13	61	5	24	1	4

FOURTH DAY

27 Preoperatively Treated Cases	17	55	10	40	6	22	3	11	None	
21 Untreated Control Cases	10	47	11	52	10	47	6	23	1	4

Chart 6

SERIOUS COMPLICATIONS

	Pulmonary Complications	Frank Pneumonia	Embolism and Phlebitis	Bacteriemia	Deaths
Treated Series 110	2	None	None	None	None
Untreated Series 196	10	4	2 (1 Death)	4 (1 Death)	2

In both series all pulmonary complications developed during first three postoperative days. Preoperative administration of sulfathiazole only affords protection against infection while the patient is under spinal anesthesia and this protection is definitely evident in our statistics during the first four postoperative days.

Chart 7

consolidation. This patient was not acutely ill and the signs and symptoms abated when sulfathiazole therapy was instituted. The second case was an 88-year-old man who had a mild chronic bronchitis before operation and developed a temperature of 102 on the second postoperative day and he, too, responded promptly to the institution of sulfathiazole therapy. These cases illustrate the fact that in the treated series the development of complications is more readily combated.

Bacteriemia, while comparatively rare after operations upon the genito-urinary tract, has always been a serious factor and one which has been responsible for a certain small percentage in the mortality. In our series of 112 cases treated by sulfathiazole preoperatively, no positive blood cultures were obtained during the first four postoperative days. In the control series of 196 cases without preoperative treatment, there were four cases in which a positive blood culture occurred and two of these developed definite septicemia, one case resulting fatally.

SUMMARY

The value of any measures which can be used preoperatively to prevent the occurrence of complications which may occur as a result of operation are obvious and in no field is this more applicable than in genito-urinary surgery. The impressive results which were obtained in the treatment of postoperative complications by sulfonamide therapy led us to use these drugs as a preoperative prophylactic precaution. The impression that cases so treated had a smoother convalescence with a lower incidence of postoperative morbidity led to a comparative study of a series of preoperatively treated cases with a series of similar cases operated upon under similar conditions with preoperative sulfonamide therapy. To eliminate variable factors all patients in both series in this study were operated upon under spinal anesthesia and in all cases sulfathiazole was used exclusively and the importance of relatively small preoperative dosage has been emphasized. The temperature chart was arbitrarily chosen as the index of postoperative morbidity. In this series, there has been a well defined difference between the two series, in that the preoperatively treated cases showed a consistently lower percentage of temperature elevations on all four postoperative days as contrasted with the temperature charts of the non-treated control series. This difference is especially noteworthy in a comparison of the temperature charts of the third and fourth days when evidences of serious infection, if it is to occur, become apparent.

No cases of pneumonia occurred in the preoperatively treated series during the first four postoperative days. Five cases of pneumonia occurred in the control series, in four of which death occurred; in two of these latter cases, pneumonia was definitely responsible for the fatal outcome.

No cases of bacteriemia were observed in the sulfathiazole preoperatively treated cases during the first four postoperative days. In the control series there were four cases from which a positive blood culture was obtained with one fatality.

This comparative study of the postoperative course of a series of cases treated preoperatively with sulfathiazole as contrasted with the postoperative course of a similar series of non-treated cases, demonstrates that the preoperative administration of sulfathiazole, especially in surgery of the genito-urinary tract, has a very definite value in preventing the occurrence of postoperative morbidity and complications.

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1201 North Calvert Street

DISCUSSION (*Abstract*)

Papers of Drs. Creecy and Switkes and Drs. Colston and Satterthwaite.

Dr. Edgar G. Ballenger, Atlanta, Ga.—The first paper presented before a medical association in the United States on sulfanilamide was read at the Baltimore meeting of the Southern Medical Association by Dr. Perrin Long.

Moreover, the first presentation in the United States before a medical association upon sulfathiazole was read by Dr. Grayson Carroll two years ago at the meeting of the Southern Medical at Memphis. These two landmarks in medical history may well be regarded as compliments to this Association.

My own experience with sulfathiazole is so nearly in accord with Dr. Creecy's that there is little I need say concerning the major part of his observations. There is one point, however, which I would like to amplify, and upon which, in all probability, Dr. Creecy will agree with me. That is that strictures of the urethra are the commonest causes of nonspecific urethritis and as soon as the acute symptoms of the urethritis have been controlled by sulfathiazole they should be gradually dilated with sounds.

In our own work we assume that a stricture or a small meatus is the cause of a nonspecific urethritis until an investigation with bulbous bougies proves this assumption to be incorrect. By following this plan we have been able to cure nonspecific urethritis with sulfathiazole and dilatation of the urethra in a shorter time than that reported by Dr. Creecy. By this I do not mean to say that the strictures were cured in a short time, but that the symptoms of nonspecific urethritis usually disappeared promptly. Urethral dilation is of course continued as needed until an adequate caliber has been obtained.

Meatotomy we feel is always needed if there is a nonspecific urethritis and the meatus will not admit a 26 F. bulb.

While many of us have been using sulfathiazole as a precystoscopic and preoperative measure we have not collected sufficient data to emphasize properly the advantages to be gained by this plan. Certainly it is desirable to employ all reasonable measures which control postoperative fever and lessen the likelihood of pneumonia and septicemia.

The healing of incisions which have to be made into areas having infection already present or in those which are likely to become infected is undoubtedly more prompt if sulfathiazole is suitably employed: that is its administration before and after operations in doses which are tolerated without undue gastric or other toxic disturbances. The local application of sulfathiazole to incisions into infected tissue, or those likely to become infected, is also of undoubted value. Parenteral administration at times may be required. If reasonably careful observations are made to detect toxic symptoms we believe that danger from appropriate sulfonamide preparations is distinctly less than is the danger of infection in areas from which it cannot be excluded.

The time is probably not far distant when surgeons operating for any condition having the possibility of opening up infected tissues will follow the plan Dr. Colston has suggested.

Dr. H. W. E. Walther, New Orleans, La.—As has often been observed, therapeutic measures must go through three phases: a period of over-enthusiasm, a period of reactionary, often rather bitter, condemnation, and, finally, a serene and even state of rationality. I have no doubt that I am speaking to a group of physicians who represent all of these phases in regard to half a dozen different sulfonamide derivatives.

The great benefits which these drugs have brought to the treatment of urologic disease should not blind us to certain facts concerning them. (1) In a definite proportion of cases the results are likely to be unsatisfactory, regardless of the preparation used. (2) No drug has yet been proved to be specific for any special infection. (3) The successive substitution of one preparation for another which has failed is not the solution of the problem of the unresponsive patient. For one thing, the tax on his time would be too great. For another, while the sulfonamides are considerably less expensive than they were, they are still not cheap drugs. (4) Finally, and this argument holds even more when the drugs are used successively than when they are used alone, the sulfonamides are dangerous drugs. It is true that most of the deaths which have followed sulfonamide therapy occurred because of faulty preparations or unwise use. Federal regulation has controlled the first danger and cautious use has reduced the second, but even when the drugs are employed with every precaution and on definite indications, they may still give rise to reactions, some of which may be very serious. The urologist can probably be trusted to check the state of his patient's kidneys, but curiously little attention is paid to the effect of the sulfonamides on the liver. Liver damage is a proven possibility following this type of therapy, and it is always important, for, even if it does not terminate fatally, it may result in permanent and irreparable pathology.

I differ with Drs. Colston and Satterthwaite in occasional details of practice, but I heartily agree with them in principle. The prophylactic use of the sulfonamide drugs before urologic surgery is now almost routine, and wound infection and sepsis have been notably decreased thereby. The method is also very useful as a prophylaxis against pneumonia and septicemia, which were formerly frequent causes of death in urologic surgery, particularly in aged patients with prostatic disease. In our personal experience these complications have been almost eliminated by the preoperative administration of sulfonamides, and they are no longer a problem when they do occur.

The results reported by Drs. Creecy and Switkes are unusually good. The urologist does not often obtain 93 per cent of good results in gonorrhea and 100 per cent in chancroid. The circumstances under which these results were obtained, however, must be borne in mind. They do not in any way parallel the usual circumstances of treatment. The patients were all young (under 32 years) apparently healthy males, who were hospitalized, to use the author's own words "under ideal conditions." Constant clinical observation was supplemented by adequate laboratory facilities, and the patients had no opportunities to retard their cures. The situation in both dispensary and private practice is usually very different. The patients are in various states of health, their environment and living habits are frequently undesirable, many of them are advanced in years, and their cooperation is likely to be indifferent if it is not actually poor. It is well known that patients confined to bed can take larger doses of the sulfonamides, and tolerate them better, than ambulatory patients. The large initial doses of sulfathiazole (3-4 grams) used by Drs. Creecy and Switkes were administered under controlled conditions, but I should hesitate to prescribe them for an ambulatory subject who is not young, whose state of health is doubtful, and over whose mode of life I had no control.

We have personally had the best results from sulfacetamide, not only from the standpoint of therapeutic results, but also from the standpoint of its low toxicity. We use small doses. Four grams every 24 hours is the maximum dosage, and a daily dose of 2 grams is frequently adequate. Bicarbonate of soda and nicotinic acid are always given with sulfacetamide, as with all other sulfonamide drugs. Our policy, in short, since we cannot treat most patients in the hospital under constant supervision, is to do the next best thing and not overdose the ambulatory subject with drugs which are in effect poisons and about which we still know comparatively little.

Dr. Owsley Grant, Louisville, Ky.—The sulfonamides have arrived at such a position in the treatment of diseases that I rather fancy if we could turn the radio on now and listen to what is going on in every room at this meeting, we should hear 50 per cent of the doctors talking about what the sulfonamides would do in different branches of medicine.

Though Dr. Colston has broken his determinations down into definite groups, and while his criterion of effect, the temperature chart, is probably the best standard he could use, I think the fact that he has clinically been impressed with his improved results is a more convincing detail than any records can show.

When considering the advantages which undoubtedly accrue from the use of sulfonamides either pre- or postoperatively, we have sufficient published information now to warn that we are not dealing with an innocuous drug. We constantly see fever as the result of sulfathiazole administration and cases that tolerate even small doses badly, and subsequent deaths, and definite calculus formation.

Perhaps I feel a little bit low about sulfonamides at present because three definite calculi discovered at autopsy in our city within the past few months have been provided due to sulfonamides. That may put a tone of skepticism in my particular view.

For every gravely unfortunate result which sulfathiazole creates, it ameliorates and improves a thousand cases. We have seen such remarkable improvement in wound healing and in prevention of even temporary fistula by the use of sulfathiazole poured into the wound at the operative table that I think we should be among the first to find ourselves susceptible to the suggestion of Dr. Colston to employ it preoperatively. But personally, I would hesitate to use it as a routine. We use it, of course, constantly in preoperative preparation of cases with already established infections in the urinary tract. We have observed sufficient reactions in these in which the treatment was definitely indicated to give us some alarm and to produce symptoms that delayed and postponed surgery.

Dr. Colston has adduced two features that I think are most worthy of consideration: first that no cases of bacteriemia occurred in the cases so treated, and that one fact alone could almost outweigh any disadvantages.

The other is the absence of pneumonias. He has wisely selected the fever charts as a method of determination rather than blood levels, because it is definitely shown that blood levels do not indicate either the effectiveness or the hazard of the drug administration.

Because sulfathiazole does act promptly, and since sulfathiazole poured into the wound at the time of operation has a double effect of local sterilization and slower absorption with consequently less reaction, that would seem to be the less hazardous procedure, and I think it is almost as effective.

Dr. E. Halsell Fite, Muskogee, Okla.—Certainly the sulfonamides have simplified the life of the urologist a great deal. We can cure most of our gonorrheal cases in a few days.

Chancroid also fades away almost immediately, and all that dirty treatment is gone.

I have started using these drugs in postoperative cystitis, and I have practically done away with these cases.

We should not, ourselves, be lulled into a state of depending entirely on the sulfonamide group and relaxing our surgical technic itself.

I cannot altogether agree with the plan of putting sulfathiazole into the wound, because these crystals are absorbed. They cause a lot of local reaction. If you are going to do it, sulfanilamide is much better to dump into the wound, particularly into the perineal cavities. You had better not put the others in there, because they do cause local reaction and intestinal obstruction.

I am afraid of what the sulfonamide group is going to do with the art of medicine. There are a lot of other drugs beside these, and we should remember them, because every now and then there is a case that we can handle in some other way.

Dr. Harold McDonald, Atlanta, Ga.—In treating gonorrhea we have been successful by combining internal administration of sulfonamide preparations with sealing argyrol in the anterior urethra. This plan is only of value when the discharge has been present for less than forty-eight hours.

Dr. Ballenger originated the method of sealing argyrol more than twenty-five years ago.

Since the advent of the sulfonamides the results from this combined method of treatment have been unbelievably good. In the last two years we have not seen a single patient who failed to be completely cured within five days' time. When a patient presents himself with acute gonorrhea and the discharge has been present not more than forty-eight hours we seal 20 or 25 minims of freshly made 5 per cent argyrol in the anterior urethra with U.S.P. collodin. He is also given 1.5 grams of sulfathiazole four times a day. This treatment is repeated on successive days until four treatments are given. The dosage of sulfathiazole is reduced after the second day to one gram four times a day. A small percentage of patients have difficulty taking this amount of sulfathiazole, but with the results we can expect, practically all of them will tough it out for the required time.

These results have made the patient with early acute gonorrhea welcome in our office.

Dr. Sam L. Raines, Memphis, Tenn.—Dr. Long, Dr. Finland and others have used sulfadiazine very freely preoperatively and have reported practically no complications in the urinary tract.

We recently saw a case in Memphis that received sulfadiazine treatment for a lung abscess. After three days he developed anuria and both ureters were blocked by precipitation of acetyl sulfadiazine. Catheters were inserted, but the anuria persisted for several days. After five days, the secretion of urine improved, but the patient died from shock and other complications.

In the cases receiving sulfathiazole, sulfadiazine and other sulfonamides preoperatively, we must be on our guard against such urinary complications. The total amount of urinary output must be carefully watched, as that is frequently the first sign of trouble. In using these drugs routinely, I feel we might encounter some of these complications which would possibly increase our operative risk. It is true they are not frequent,

but the above report shows they do occur even with the newer drugs.

Dr. Grayson Carroll, St. Louis, Mo.—The report that Dr. Raines, of Memphis, has just given you concerning the formation of concretions in the urine following the use of sulfadiazine is probably the first clinical case so reported. It was stated by the original investigators of this drug that concretions were less likely to form. The clinical experience is ultimately the only appraisal of this statement.

Dr. Creecy (closing).—I wish to thank Dr. Ballenger particularly for bringing out the point that nonspecific urethritis may be complicated by a stricture. I believe if we had borne that fact in mind unquestionably some of our results with the nonspecific urethritis group would have been a great deal better.

Liver damage was probably the thing that we bore most in mind in observing these cases. The blood dyscrasia and possible renal damage were well controlled by blood counts, observation of urinary output and repeated urinalyses. With large doses we were always afraid that some damage might occur and for that reason observation for bile in the urine and determination of icteric index in the blood were done whenever there was no suspicion of jaundice. In our follow-ups there was no recorded incidence of any diseases arising which might have been due to liver damage.

Dr. Colston (closing).—In regard to reactions and complications from sulfathiazole, I think if the dosage which I tried to emphasize in preoperative cases is kept low, about two or three grams a day, not over, you will have no trouble at all.

The cases in which there have been severe reactions, are those in which the dosage has been high and continued over a considerable period of time.

CUTANEOUS REACTIONS DUE TO SULFANILAMIDE*

By R. W. Fowlkes, M.D.
Allen Pepple, M.D.
Richmond, Virginia
and
Edwin W. Vaughan, M.D.
Greensboro, North Carolina

Since its introduction, in 1935, sulfanilamide has been used extensively. Numerous cutaneous reactions have been reported.[1] We feel that the following cases are worthy of publication:

Case 1.—H. B., a 34-year-old negro male, was seen in the dermatology clinic on January 26, 1940, complaining of "breaking out in spots." Six months before admission this man went to his family physician for treatment of a urethral discharge for which he was given ten grains of sulfanilamide to take every four hours. In about ten days the discharge disappeared, but the patient continued to take the sulfanilamide at irregular intervals. Three months prior to admission he noticed a "breaking out in spots" on his body, which itched, burned, and became elevated, and at the same time his lower lip became swollen, itched, burned, and cracked. Until the date of admission, this man noticed the above symptoms at irregular intervals. Examination on admission revealed pigmented macules about the size of a quarter on the right shoulder, right forearm (*Fig. 1*), periungual region of the right thumb and middle finger, over the sacrum, and on the glans penis. The lower lip was slightly swollen and fissured. The remainder of the physical examination was irrelevant. Two Wassermann reactions of the blood were negative. The routine examination of the blood and urine were essentially normal.

The patient was instructed to discontinue taking sulfanilamide. He returned to the clinic one week later, saying that he had been relieved of all subjective symptoms. He was given twenty grains of sulfanilamide and watched closely: within twenty minutes he noticed itching and burning of each lesion and within forty-five minutes the lesions became elevated and the lip became swollen. Two hours after ingestion of the drug the blood sulfanilamide content was 6.3 mg. per hundred cubic centimeters. This patient was seen again one week later and he reported that he had not noticed any itching, burning or swelling of the lesions since the previous visit. He was again given twenty grains of sulfanilamide and within twenty minutes all of his symptoms reappeared. Two weeks later he returned and reported no symptoms since the previous visit: this time he was given a placebo of ten grains of sodium bicarbonate; itching, burning and swelling of the lesions did not appear. A specimen excised from one of the macules for biopsy revealed moderate hyperkeratosis and acanthosis, dilatation of the vessels of the sub-papillary region, with an ac-

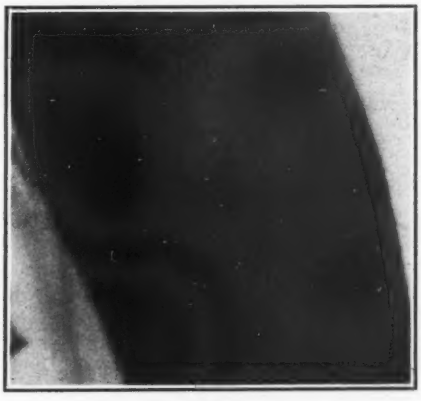

Fig. 1
Pigmented macule on forearm.

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*From the Department of Dermatology of the Medical College of Virginia.

companying perivascular lymphocytic infiltration and chromatophores loaded with melanin (*Fig. 2*). Passive transfer tests were negative. This undoubtedly was a fixed drug eruption due to the ingestion of sulfanilamide.

Case 2.—F. R., a 9-year-old negro girl, was seen on January 15, 1940, in the Department of Ophthalmology with a desquamative blepharitis of the left lower lid. She was given sulfanilamide ointment to apply locally three times a day. On March 26, 1940, this patient was seen by us at the request of the Department of Ophthalmology for a dermatitis of three weeks' duration, which involved the lids of the left eye (*Fig. 3*). Boric acid compresses and boric acid ointment were prescribed for local use. Two weeks later, when this patient was seen, the dermatitis about the left eye had cleared up entirely. Sulfanilamide ointment was again applied to the lower lid and in twenty-four hours a severe dermatitis reappeared, which subsided under the previous treatment.

We have been able to find only two cases of fixed eruption due to the ingestion of sulfanilamide.[1] In the second case a dermatitis venenata resulted from the local use of sulfanilamide ointment. We have not been able to find a similar case reported in the literature.

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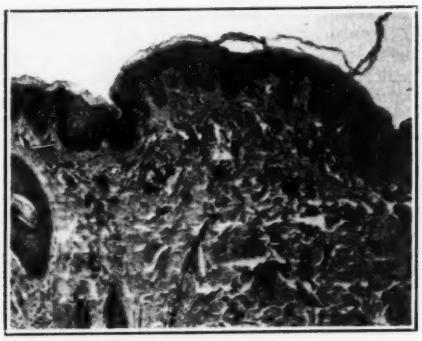


Fig. 2
Note hyperkeratosis, acanthosis, dilated blood vessels, and chromatophores loaded with pigment.

Fig. 3
Dermatitis involving eyelids.

Airplane view of downtown Richmond

RICHMOND—WHERE WE MEET

RICHMOND*

Guests at the annual meeting of the Southern Medical Association, returning to Virginia's Capital for the first time since 1933, will find its pulse beating faster, throbbing to the accelerated tempo of the times.

They will find spacious streets thronged with khaki-clad soldiers, white-hatted tars and trim marines, for Richmond, in addition to being the hub of an area which includes half a dozen bustling army camps, is itself the site of a giant quartermaster depot, a sprawling army air base, and a naval training school. But underneath the surface tension visitors will find the same strong heart of the city, beating with the serenity bred of an ancestry inured to war.

It was during the Revolutionary War, in 1779, that the capital was moved to Richmond from Williamsburg, providing the nucleus for growth and expansion as the first city of the Commonwealth. As a footnote to Richmond's medical history, it might be mentioned that "Dr. Gardiner's Hospital for Smallpox" was opened in 1780 for those "needing attention or desiring to be inoculated."

On January 5, 1781, Richmonders watched the traitor, Benedict Arnold, enter the city with 800 British troops, disperse the city's militia without loss of a man and proceed to burn tobacco warehouses along with other public and private buildings. After twenty-four hours of pillaging and plunder, Arnold and his men left, and Richmond's 1,800 inhabitants began rebuilding on the ruins.

On April 2-3, 1865, war again laid its heavy hand on the city. Lee's lines broke at Petersburg, and once more the torch was applied to Virginia's capital, this time by retreating Confederate soldiers, determined to leave no usable supplies for pursuing Yankee troops. The heart of the city's business section was torn out by the flame, leaving miles of blackened shells where once stood thriving business houses.

But Richmond, indomitable, rose anew, and by 1917, when war came again, old scars were healed and the city was riding the crest of half a century of continued progress. This time the actual conflict was remote and did not touch the city physically. Spiritually and every other way, however, Richmond rose to the occasion. Thousands of the city's sons went off to fight the enemy on distant fields, and on the home front Richmond oversubscribed by many million dollars the four Liberty Loan drives.

Now, in 1942, war has come again to Virginia's capital and found the community ready. Already established as the fastest growing industrial city in the nation before World War II, the roar of Richmond's factories is rising to a new crescendo of production. The blood of industry is pounding in the city's temples, but underneath, inside, Richmond is the same.

In the quiet laboratories of the Medical College of Virginia, one of the South's finest medical schools, research goes on oblivious to outside

*Prepared for the JOURNAL by the Public Relations Department, Richmond Chamber of Commerce.

Virginia State Capitol—Oldest state capitol in the United States in continuous use, housing the oldest lawmaking body in America. In the rotunda is the world-famous Houdon Statue of Washington, one of the most valuable pieces of statuary on the American continent. The old Hall of the House of Delegates is perhaps the most historic room in all America with the possible exception of Independence Hall in Philadelphia.

disturbance. In the magnificent new Medical College Hospital, and in nearly a score of other havens scattered about the city, the science of healing assisted by all the mechanical accessories known to modern medicine goes forward.

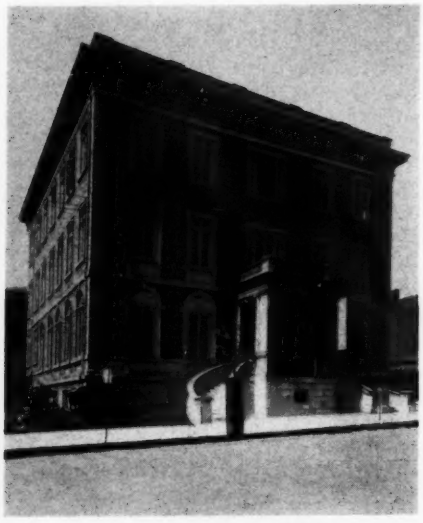
Richmond today stands unchallenged as one of the medical centers of the South. The Medical College, now extending over many acres in the heart of the city, is the result of more than a century of progress. Organized in 1836, its first home was the old Union Hotel on East Main Street. Expansion was steady although the road was blocked by many obstacles. Today the Medical College of Virginia stands as a monument to the perseverance of the city's medical men.

Another potent force in Richmond's medical history has been the Richmond Academy of Medicine, formed in 1866. Housed in its own building, close to the Medical College, the Acad-

Capitol Grounds—Equestrian Statue of Washington, surrounded by other famous Virginians; the Capitol (rear and side view), the Governor's Mansion (to left at end of driveway); and State Office Building (upper right hand corner).

Medical College of Virginia—(1) Hospital for white patients; (2) Cabaniss Hall, dormitory for white nurses; (3) Clinic and Laboratory Building; (4) Saint Philip Hospital for Negro patients; (5) Dooley Hospital for Negro Children; (6) Saint Philip Hall, dormitory for Negro nurses. Other buildings not shown in picture: Hunton Hall, dormitory for house staff and students; McGuire Hall, laboratories, dentistry and pharmacy; Old Virginia Hospital, dental laboratories and lecture rooms; Egyptian Building, bacteriology and pathology; Memorial Hall, dormitory for white nurses; Gaillard Laboratory, morgue and autopsy facility; and heating plant, laundry, and animal quarters.

Home of the Richmond Academy of Medicine, offices of the Medical Society of Virginia and Library of the Medical College of Virginia.



Young Women's Christian Association

emy possesses one of the finest medical libraries in the South, given to the Academy by Dr. Joseph Lyons Miller. In the quiet, studious atmosphere of the Academy, physicians are free to utilize the information contained in the volumes lining its walls.

Yes, underneath Richmond is the same. Culturally the city continues to maintain its place. Its authors continue to write the words a nation reads. Recently off the presses has come the first edition of "Lee's Lieutenants," by Dr. Douglas Southall Freeman, editor of the *Richmond News Leader*, and world's foremost authority on General Robert E. Lee. His biography of General Lee won the Pulitzer Prize some years ago. Ellen Glasgow, who won the 1942 Pulitzer Prize for fiction with her novel, "In This Our Life," is also a native of Richmond. Earlier this year, the book, "Below the Potomac," by Virginius Dabney, editor of the *Richmond Times-Dispatch*, was hailed by critics as a fine study of the South and its problems. James Branch Cabell, whose name is familiar to thou-

(1) First Baptist Church. (2) St. Paul's Episcopal Church. It was here in this present building that President Jefferson Davis and General Robert E. Lee worshipped. President Davis was here when the message came to him from General Lee that Richmond must be evacuated. (3) Second Presbyterian Church. (4) Centenary Methodist Church. (5) Sacred Heart Cathedral (Catholic). (6) Beth Ahabah Synagogue.

sands of book lovers, completes Richmond's quartet of top flight authors whose writings do much to contribute to Richmond's place in the literary sun.

Unchanged, too, are the Capital's many picturesque historic shrines. Convention guests will find that unlike many other cities, sightseeing in Richmond has been little curtailed by tire and gasoline restrictions. Many of the spots where history was made are within easy walking distance of the Hotel John Marshall, convention headquarters. Dominating the list of places to see, of course, is the capitol building, at Ninth and Grace Streets, designed by Thomas Jefferson, after the magnificent Maison Carree at Nimes, France. In the rotunda of the original building stands the priceless Houdon statue of George Washington. Sculptured from life, it is the only one in existence for which Washington himself posed. The statue was placed in the rotunda in 1788. Here also is a head of La-Fayette by Houdon, and the busts of eight Virginia men who have been presidents of the United States. Interesting also is the old Hall

Carillon, Virginia's Memorial to her dead of World War I, located in beautiful Byrd Park.

(1) Stuart Circle Hospital. (2) Johnston-Willis Hospital. (3) St. Luke's Hospital. (4) Westbrook Sanatorium. (5) Grace Hospital. (6) St. Elizabeth's Hospital. (7) Tucker Hospital.

Stonewall Jackson on Monument Avenue

Jefferson Davis Memorial on Monument Avenue

Confederate Memoral Institute (Battle Abbey)—A memorial to the soldiers of the South who served the Confederate cause during the War Between the States. This building houses the largest collection of Confederate portraiture in existence and is known for the famous Hoffbauer murals depicting four seasons of the Confederacy.

Country Club of Virginia—Site of two fine championship golf courses.

of Delegates where Aaron Burr was tried for treason in 1807 before Chief Justice John Marshall. A statue of General Lee stands on the spot in the hall where he accepted command of Virginia's forces on April 23, 1861.

Nearby, at Twelfth and Clay Streets, in the immediate neighborhood of the Medical College of Virginia, is the White House of the Confederacy, home and office of President Jefferson Davis during the War Between the States. It houses the most complete collection of Confederate war relics in the United States.

Just a block away, at Eleventh

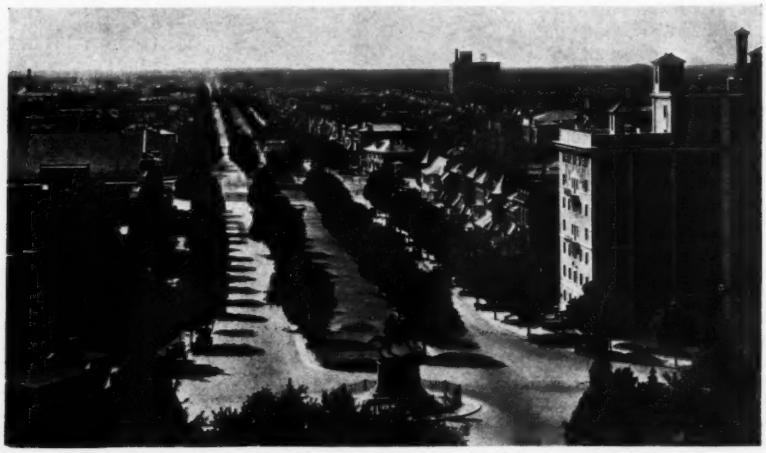
Young Men's Christian Association

(1) Poe Shrine. Oldest house in Richmond, erected about 1686, and now a memorial to Edgar Allen Poe. (2) St. John's Church (Episcopal). Oldest church in Richmond, erected in 1741. It was here that Patrick Henry delivered his immortal "liberty or death" oration. In the Church yard are the graves of many famous Virginians. (3) John Marshall House, home of the late Chief Justice John Marshall. (4) Garden of the Poe Shrine. (5) Houdon Statue of Washington in the rotunda of the Capitol. (6) White House of the Confederacy, home of Jefferson Davis and his family during the War Between the States and now a Confederate Museum.

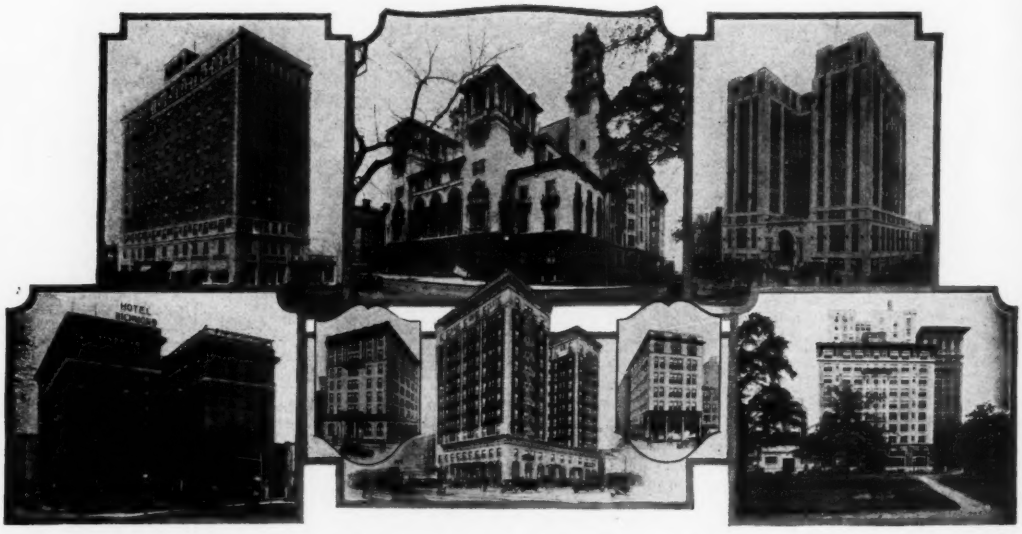
and Clay, is the Valentine Museum, another famous home which reflects bygone Richmond. Its most famous piece is a plaster cast of the recumbent statue of General Lee. Also housed there are articles of Indian archaeology and other relics. At Ninth and Marshall is John Marshall House, home of the nation's first chief justice of the United States Supreme Court.

Also, in this general section of the city, and easily accessible by public transportation, are the Edgar Allan Poe Shrine at 1916 East Main Street, and famous St. John's Church at Twenty-Fourth and East Broad Streets.

Less than two blocks from the hotel at 707 East Franklin Street is Robert E. Lee House, the home to which General Lee returned follow-



Monument Avenue—The first monument is J. E. B. (Jeb) Stuart, the second is Robert E. Lee. Monument Avenue is one of the most beautiful residential streets in America.



Some Richmond Hotels—Top left, William Byrd; top center, Jefferson; top right, John Marshall (General Headquarters); bottom left, Richmond; bottom center, Murphy's and Annexes; bottom right, Ruegers.

ing the surrender at Appomattox. It is now the home of the Virginia Historical Society and houses a famous collection of historic manuscripts.

Walking one block north, and boarding any west bound bus on Grace Street, the visitor can ride to Boulevard and Kensington Avenue, location of the Confederate Memorial Institute, and famed for its Hoffbauer murals depicting the four seasons of the Confederacy. Nearby at Grove Avenue and the Boulevard is the Virginia Museum of Fine Arts.

Transportation difficulties are thus minimized for sightseeing, as well as for other recreation for the convention visitor. The hotel is in the heart of the downtown shopping and theatre district, so close, in fact, that a car is a handicap instead of a help.

Richmond's own location as a community, and its fine travel facilities from other points, make it one of the most accessible cities in the East and South. It is within a 500 mile radius of 21 states, representing a total population of 70 million people. The city is served by six trunk line railroads, converging on Richmond from all points.

Climatically, the convention visitor will find Richmond ideal in November. United States Weather Bureau statistics show that the average November temperature is around 50 degrees, with a maximum of 57 degrees, ideal for sightseeing, and outdoor sports, including golf at the Country Club of Virginia, which will be one of the meeting's recreation features.

Thus, Richmond, alert, alive, and thriving, has scrubbed and polished its welcome mat and awaits the opportunity to greet guests to the twenty-sixth annual convention of the Southern Medical Association. Ready to play the gracious host is the Richmond Academy of Medicine, through its president, Dr. Beverley R. Tucker, and other officials and members. General Chairman, Dr. Wyndham B. Blanton, and his fellow members of the committee on local arrangements have outdone themselves to set the stage for a successful meeting.

Nothing remains now but for physicians to come, see, learn, and be entertained.

McGuire Monument in the Capitol Grounds—Inscription on monument: "To Hunter Holmes McGuire, M.D., LL.D., President of the American Medical and of the American Surgical Associations; Founder of the University College of Medicine; Medical Director, Jackson's Corps, Army of Northern Virginia; An eminent civil and military surgeon, and beloved physician; An able teacher and vigorous writer; A useful citizen and broad humanitarian; Gifted in mind and generous in heart. This monument is erected by his many friends."

Matthew Fontaine Maury, Pathfinder of the Seas, on Monument Avenue.

OFFICERS OF RICHMOND ACADEMY OF MEDICINE, HOST SOCIETY

President—Dr. Beverley R. Tucker.
President-Elect—Dr. Arthur S. Brinkley.
First Vice-President—Dr. Emmett H. Terrell.
Second Vice-President—Dr. A. E. Turman.
Recording Secretary—Dr. John P. Lynch.
Secretary and Treasurer—Mrs. H. V. Godbold, Jr.
Sergeant-at-Arms—Dr. B. W. Rawles, Jr.
Chairman, Board of Trustees—Dr. William B. Porter.

COMMITTEES ON ARRANGEMENTS, RICHMOND

General Chairman—Dr. Wyndham B. Blanton.

Honorary Vice-General Chairmen—Dr. Stuart McGuire, Dr. J. Shelton Horsley, Dr. Chas. A. Blanton, Dr. Chas. R. Robins, Dr. James K. Hall, Dr. Douglas VanderHoof, Dr. W. Lowndes Peple and Dr. I. C. Riggin.

Executive Committee—Dr. Beverley R. Tucker, Dr. Fred M. Hodges, Dr. Thomas W. Murrell, Dr. William T. Sanger and Dr. Wyndham B. Blanton.

Finance—Dr. William H. Higgins, Chairman; Dr. Arthur S. Brinkley, Dr. Oscar B. Darden, Dr. R. Finley Gayle, Jr. and Dr. Thos. S. Meade.

Clinical Sessions Program—Dr. I. A. Bigger, Chairman; Dr. Austin I. Dodson, Dr. B. H. Gray, Dr. A. L. Herring, Dr. J. P. Lynch and Dr. D. D. Talley, Jr.

Entertainment—Dr. T. Dewey Davis, Chairman; Dr. Thomas Beath, Dr. O. L. Hite, Dr. Rex Blankenship and Dr. J. Asa Shield.

Membership—Dr. T. Neill Barnett, Chairman; Dr. J. B. Stone, Dr. R. W. Fowlkes, Dr. M. Pierce Rucker and Dr. Clifton M. Miller.

Hotels—Dr. Fred P. Fletcher, Chairman; Dr. T. E. Hughes, Dr. Clifford Beach, Dr. R. D. Butterworth and Dr. T. F. Gill.

Meeting Places—Dr. Lee E. Sutton, Jr., Chairman; Dr. B. B. Jones, Dr. W. P. Barnes, Dr. W. D. Suggs and Dr. D. G. Chapman.

Radio—Dr. Harvey B. Haag, Chairman; Dr. Guy W. Horsley, Dr. Sidney S. Negus, Dr. Nathan Bloom and Dr. D. S. Daniel.

Publicity—Dr. Charles L. Outland, Chairman; Dr. Sidney S. Negus, Dr. Reuben Simms and Dr. L. Ben Sheppard.

Alumni Reunions—Dr. James H. Smith, Chairman; Dr. Lewis E. Jarrett, Dr. Carrington Williams, Dr. S. A. Anderson, Jr., Dr. W. D. Suggs, Dr. Lee E. Sutton, Jr. and Dr. H. Wallace Blanton.

Fraternity Luncheons—Dr. Austin I. Dodson, Dr. W. K. Dix, Dr. T. B. Washington, Dr. L. O. Snead and Dr. L. T. Stoneburner, Jr.

Scientific Exhibits—Dr. W. Ambrose McGee, Chairman; Dr. D. B. Cole, Dr. H. J. Warthen, Jr. and Dr. J. C. Forbes.

Hobbies—Dr. Warren T. Vaughan, Chairman; Dr. J. O. Fitzgerald, Jr. and Dr. M. Grove-Hagen.

Golf—Dr. Paul W. Howle, Chairman; Dr. W. R. Jordan and Dr. Emmett H. Terrell.

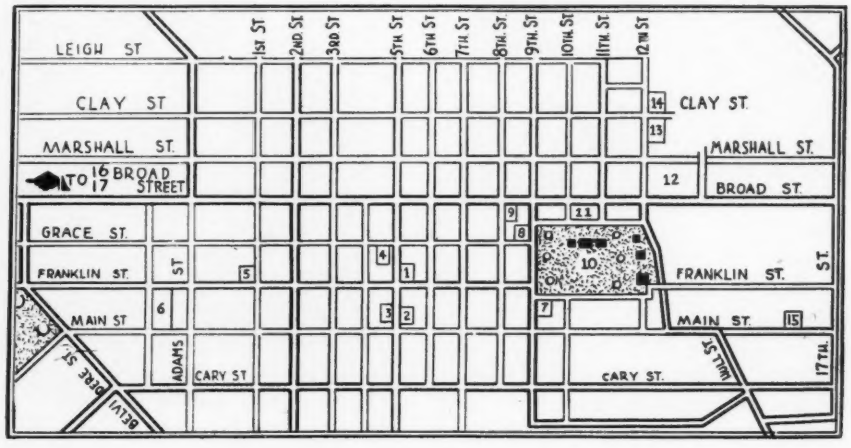
Trap Shooting—Dr. Stuart N. Michaux, Chairman; Dr. B. R. Wellford and Dr. Chas. R. Robins, Jr.

Women Physicians—Dr. Emily Gardner, Chairman; Dr. Regena Beck and Dr. Pauline Williams.

Ladies' Entertainment—Mrs. James K. Hall, Chairman; Mrs. Thomas W. Murrell, Mrs. Wyndham B. Blanton, Mrs. Lee E. Sutton, Jr., Mrs. Austin I. Dodson, Mrs. J. Asa Shield, Mrs. Douglas G. Chapman, Mrs. James T. Tucker, Mrs John Powell Williams and Mrs. Percy E. Schools.

STREET MAP OF RICHMOND

1. HOTEL JOHN MARSHALL.
2. Second Presbyterian Church.
3. Young Women's Christian Association.
4. Centenary Methodist Church.
5. Young Men's Christian Association.
6. JEFFERSON HOTEL.
7. Rueger Hotel.
8. HOTEL RICHMOND
9. Murphy's Hotel.
10. State Capitol and Capitol Grounds.
11. City Hall.
12. Medical College of Virginia.
13. White House of the Confederacy, a Confederate Museum.
14. Home of the Richmond Academy of Medicine; offices of the Medical Society of Virginia; and Library of the Medical College of Virginia.
15. Main Street Railroad Station.
16. William Byrd Hotel.
17. Broad Street Railroad Station.



PROGRAM, SOUTHERN MEDICAL ASSOCIATION
Thirty-Sixth Annual Meeting, Richmond, Virginia
November 10-12, 1942

PROGRAM

The following general and clinical sessions, sections, and conjoint meetings, compose the program for the Richmond meeting. The complete preliminary program of each will be found in this order on succeeding pages, following the program of entertainment, scientific and hobby exhibits and miscellaneous activities:

General Session (Tuesday night).
Clinical Sessions, Richmond Day (Tuesday).
Section on General Practice.
Section on Medicine.
Section on Gastroenterology.
Section on Neurology and Psychiatry.
Section on Pediatrics.
Section on Pathology.
Section on Radiology.
Section on Dermatology and Syphilology.
Section on Allergy.
Section on Physical Therapy.
Section on Surgery.
Section on Bone and Joint Surgery.
Section on Gynecology.
Section on Obstetrics.
Section on Urology.
Section on Proctology.
Section on Ophthalmology and Otolaryngology.
Section on Anesthesia.
Section on Medical Education and Hospital Training.
Section on Public Health.
American Public Health Association, Southern Branch.
National Malaria Society.
American Society of Tropical Medicine and American Academy of Tropical Medicine.
American Academy of Pediatrics, Region 2.
Woman's Auxiliary to the Southern Medical Association.

PROGRAM OF ENTERTAINMENT

TUESDAY, NOVEMBER 10, 9:30 p. m.—Reception for President, members and guests of the Southern Medical Association, followed by a Grand Ball, Hotel John Marshall, Roof Garden.

Entertainment for Visiting Ladies

Mrs. James K. Hall, Chairman for Ladies' Entertainment, announces the following activities and entertainment for visiting ladies:

TUESDAY, NOVEMBER 10—Registration at Jefferson Hotel, Franklin Street Entrance, beginning at 9:00 a. m., and at Hotel John Marshall.

TUESDAY, NOVEMBER 10, 2:15 p. m.—Walking tour to White House of the Confederacy; the Medical College of Virginia; the Old Egyptian Building; House of John Wickham; Valentine Museum; John Marshall House; and the Richmond Academy of Medicine Building.

TUESDAY, NOVEMBER 10, 4:00-6:00 p. m.—Tea at the Richmond Academy of Medicine Building by the Woman's Auxiliary to the Richmond Academy of Medicine.

TUESDAY, NOVEMBER 10, 8:00 p. m.—General Session, Hotel John Marshall, Roof Garden.

TUESDAY, NOVEMBER 10, 9:30 p. m.—Reception for President, members and guests of the Southern Medical Association, followed by a Grand Ball, Hotel John Marshall, Roof Garden.

WEDNESDAY, NOVEMBER 11, 8:00 a. m.—Pre-Convention Executive Board Meeting and Breakfast, Woman's Auxiliary to the Southern Medical Association, Jefferson Hotel, Flemish Room.

WEDNESDAY, NOVEMBER 11, 10:00 a. m.—Annual Meeting (First Session), Woman's Auxiliary to the Southern Medical Association, Jefferson Hotel, Auditorium.

WEDNESDAY, NOVEMBER 11, 1:00 p. m.—Annual Luncheon, Woman's Auxiliary to the Southern Medical Association, Jefferson Hotel. Luncheon tickets, $1.50.

WEDNESDAY, NOVEMBER 11—Following the luncheon a walking tour of Capitol Grounds and visit to the State Capitol.

WEDNESDAY, NOVEMBER 11, 4:15 p. m.—Tea at the Governor's Mansion, Mrs. Colgate W. Darden, Jr., Hostess.

THURSDAY, NOVEMBER 12, 9:30 a. m.—Annual Meeting (Concluding Session) Woman's Auxiliary to the Southern Medical Association, Jefferson Hotel, Auditorium.

WOMEN PHYSICIANS

The twenty-eighth annual meeting and dinner for Women Physicians of the Southern Medical Association will be held at Richmond, Wednesday, November 11, at 7:00 p. m., at the Hotel John Marshall. Dr. Grace Scholz Mountjoy, St. Louis, Missouri, Chairman of Women Physicians of the Southern Medical Association, will preside.

Women Physicians are cordially invited to take part in any and all of the special entertainment arranged for visiting ladies.

Dr. Emily Gardner, 1100 West Franklin Street, Richmond, is Chairman of the local committee for Women Physicians.

RICHMOND ACADEMY OF MEDICINE

Again the Richmond Academy of Medicine extends a most cordial welcome to the Southern Medical Association.

The history of the Academy is based on the efforts of a few physicians who in the year 1852 met and formed the Medico-Chirurgical Society of Richmond. Up to this time The Medical Society of Virginia had in reality been Richmond's local association, but when it gave promise of becoming a state organization in 1852 the local physicians felt the need of their own society. This society, however, did not escape the troubles usually experienced by young, struggling organizations and in 1855, no meetings having been held for seven months, an attempt was made to revive it. The success of this attempt was negligible and there is no further record of this organization.

After this beginning and abrupt ending of organized medicine in Richmond, another meeting of the physicians of the city was held in January, 1866, to organize a new society, The Richmond Academy of Medicine. At first there was much scientific interest and subjects such as typhoid, malaria, meningitis, diphtheria, consumption and quinine engaged the attention of the membership. Interest again waned on the part of the membership and in the year 1880, as a protest to this lack of interest, The Richmond Medical and Surgical Society was organized by an active few. The Society met twice a month. This Society

offered the services of its members in the Charleston earthquake in 1886, the President, Dr. John G. Skelton, telegraphing, "If any doctors are needed, telegraph us how many, and we will bear all expenses."

In the year 1890 a union of the two societies was effected. The Richmond Academy of Medicine and Surgery, as it was called, began with sixty charter members. This organization continued to grow and exercise its influence and by 1920 there were more than 250 members.

In 1923 the name of the organization was again changed to The Richmond Academy of Medicine.

In 1926 a combination of circumstances led to a campaign for funds to erect a permanent home for the Academy. Attempts had been made on numerous occasions, but the offer of Dr. Joseph Lyon Miller of his library was the incentive which united the profession in an effort to realize at this time the long felt need of a home of its own.

Therefore in September of 1932 The Richmond Academy of Medicine entered into a new era in its life when its building was completed and formally opened. In recent years the Academy had expanded activities into social service as well as purely scientific functions. The meetings are still held twice a month and the membership has grown to more than 350.

The officers of the Academy are: Dr. Beverley R. Tucker, President; Dr. Arthur S. Brinkley, President-Elect; Dr. Emmett H. Terrell, First Vice-President; Dr. A. E. Turman, Second Vice-President; Dr. John P. Lynch, Recording Secretary; Mrs. H. V. Godbold, Jr., Secretary and Treasurer; Dr. B. W. Rawles, Jr., Sergeant-at-Arms; and Dr. William B. Porter, Chairman of Board of Trustees.

HOTEL ACCOMMODATIONS

Richmond has a number of good hotels offering comfortable accommodations. The Hotel John Marshall is general hotel headquarters. The Jefferson Hotel is headquarters for the American Public Health Association, Southern Branch, the National Malaria Society, American Society of Tropical Medicine, and headquarters and meeting place for the Woman's Auxiliary to the Southern Medical Association. The Richmond Hotel is headquarters and meeting place for the American Academy of Pediatrics, Region 2. Other good hotels close by are William Byrd, Murphy and Rueger. All requests for reservations should go to HOTEL COMMITTEE, Southern Medical Association, Dr. Fred P. Fletcher, Chairman, 109 North Fifth Street, Richmond. In writing for accommodations be sure to state price and type of accommodations desired and time of arrival.

RADIO

Richmond has three radio stations, WMBG (National); WRNL (Mutual); and WRVA (Columbia). It is expected that the Association will be on the air during the Richmond meeting from all of these stations.

TRANSPORTATION

Although travel conditions are not ideal it is anticipated that all who wish to attend the meeting can be provided with transportation if they make arrangements early enough. There will be no travel priorities available for those attending the meeting, either as to the use of rail, bus, air, or private automobile.

Richmond can be reached by train and bus from all directions—from the South, the North, the West and the East—and by air from the South and the North.

It is recommended that all who plan to attend request reservations several weeks in advance, and as soon as reservations are confirmed to purchase round trip tickets, both train fare and pullman. It is always possible to get a refund on railroad and pullman tickets if they are not used and notice is given the ticket agent in advance of departure. Some transportation lines will not hold reservations very long after they are made. The safe thing to do is to buy the tickets when reservations are confirmed even though this be several weeks in advance. So it is urged that all those planning to attend the meeting make their travel arrangements early.

ALUMNI REUNIONS

Wednesday, November 11, 7:00 p. m.

Wednesday evening has been set aside for Alumni Reunions. Here are the schools it is anticipated will have alumni dinners and the name and address of the Richmond physician who will act for each group, those known at the time this program went to press. Dr. James H. Smith, 1000 West Grace Street, Richmond, is Chairman of the Alumni Reunions Committee. Arrangements will be made for any schools not listed if they wish a dinner and the Chairman is notified.

Medical College of Virginia, Richmond, Lewis E. Jarrett, Medical College of Virginia Hospital. The reunion dinner will be in the nature of a "home-coming" event and a special program suitable for the occasion has been arranged. All physicians who are graduates of schools that do not have reunion dinners are most cordially invited to join with the Medical College of Virginia in their celebration. The President of the Southern Medical Association, Dr. M. Pinson Neal, Columbia, Mo., and Chairman of the Council, Dr. R. J. Wilkinson, Huntington, W. Va., are alumni of the Medical College of Virginia and will be honor guests at the dinner.

University of Virginia School of Medicine, Charlottesville, Carrington Williams, 816 West Franklin Street.

Johns Hopkins University School of Medicine, Baltimore, S. A. Anderson, Jr., 2326 West Grace Street.

University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore.

George Washington University School of Medicine, Washington, J. A. Rollings, 928 West Franklin Street.

Georgetown University School of Medicine, Washington.

Duke University School of Medicine, Durham, Edwin M. Rucker, 116 East Franklin Street.

Medical College of the State of South Carolina, Charleston.

Emory University School of Medicine, Atlanta.

University of Georgia School of Medicine, Augusta.

University of Louisville School of Medicine, Louisville.

Vanderbilt University School of Medicine, Nashville.

University of Tennessee College of Medicine, Memphis.

Tulane University School of Medicine, New Orleans.

University of Pennsylvania School of Medicine, Philadelphia, W. D. Suggs, Stuart Circle Hospital.

Jefferson Medical College, Philadelphia.

Harvard University Medical School, Boston, Lee E. Sutton, Jr., Medical College of Virginia Hospital.

Columbia University College of Physicians and Surgeons, New York, H. Wallace Blanton, 828 West Franklin Street.

FRATERNITY LUNCHEONS

Thursday, November 12, 1:00 p. m.

All fraternity luncheons will be held Thursday 1:00 p. m. The names of the fraternities that will have luncheons are here given with the name and address of the Richmond physicians who will represent each group. The place where the luncheon will be held will be given in the Official Program. Dr. Austin I. Dodson, 805 Professional Building, Richmond, is Chairman in charge of Fraternity Luncheons.

Theta Kappa Psi, W. K. Dix, 116 East Franklin Street.

Phi Chi, T. B. Washington, 923 West Franklin Street.

Phi Rho Sigma, L. O. Snead, 1000 West Franklin Street.

Phi Beta Pi, R. F. Sims, 211 West Grace Street.

Alpha Kappa Kappa, W. H. Parker, 602 West Franklin Street.

OFFICERS' WARTIME LUNCHEON

Wednesday, November 11, 12:30 noon

Y W C A, 6 North Fifth Street

The Southern Medical Association will sponsor and be host to an Officers' Wartime Luncheon at the Richmond meeting for the officers of the Association; officers of organizations meeting conjointly; Presidents, Presidents-Elect, Secretaries and Editors of state medical associations in the South; and officers of other groups attending the meeting. The luncheon speaker will be Dr. James E. Paullin, Atlanta, Georgia, President of the American College of Physicians, President-Elect of the American Medical Association, Past-President of the Medical Association of Georgia and member of the Directing Board of the Procurement and Assignment Service for Physicians, Dentists and Veterinarians, his subject being "The Value of Medical Organizations in the War Effort."

This Officers' Wartime Luncheon has been arranged by Dr. Harvey F. Garrison, Jackson, Mississippi, President-Elect of the Southern Medical Association, who will preside.

LUNCHEON CLUBS

The following luncheon clubs of Richmond extend a most cordial invitation to all members in attendance upon the Southern Medical Association meeting who are members of these clubs in their home city to have lunch with them:

Civitan Club, Monday, November 9, 6:00 p. m., Hotel John Marshall.

Cosmopolitan Club, Tuesday, November 10, 6:30 p. m., Hotel John Marshall.

Exchange Club, Monday, November 9, 6:15 p. m., Hotel William Byrd.

Kiwanis Club, Monday, November 9, 12:45 p. m., Hotel John Marshall.

Lions Club, Wednesday, November 11, 1:00 p. m., Hotel John Marshall.

Monarch Club, Thursday, November 12, 6:15 p. m., Hotel John Marshall.

Optimist Club, Monday, November 9, 1:00 p. m., Hotel John Marshall.

Optimist Club (South Richmond), Thursday, November 12, 6:30 p. m., Ewart's Cafeteria.

Rotary Club, Tuesday, November 10, 12:45 p. m., Hotel John Marshall.

Sphinx Club, Thursday, November 12, 1:00 p. m., Ewart's Cafeteria.

GOLF TOURNAMENT

The twenty-second annual golf tournament for men of the Southern Medical Association will be held at the Country Club of Virginia, Westhampton Course, Richmond. The tournament will consist of one eighteen-hole round of medal play and entries are privileged to play any time from Tuesday, November 10, until Thursday noon, November 12. A player must specify his handicap before starting tournament play. Each golfer should wear the official badge when visiting the golf club.

The four major trophies will be played for again this year. *The Daily Oklahoman and Times* Cup, in play since 1938, for low gross, junior class (physicians under 50 years of age); the Ralston Purina Cup, in play since 1935, for low gross, senior class (physicians over 50 years of age); the Schwarzschild Trophy, in play since 1933, for runner up in low gross, and the *Dallas Morning News* Cup, in play since 1925, handicap for low net. All these trophies are to be played for each year until won three times by the same golfer. In addition to the four major trophies above mentioned, other valuable prizes will be given.

Players in attendance at the Southern Medical Association meeting and wearing the official badge will be accorded playing privileges at the Country Club of Virginia, greens fees $1.00.

Dr. Paul W. Howle, 1015 West Franklin Street, Richmond, is Chairman of the Golf Committee, and associated with him are Dr. William R. Jordan and Dr. Emmett H. Terrell.

TRAP AND SKEET SHOOTING TOURNAMENT

After a conference of the Chairman of the Richmond Committee on Trap and Skeet Shooting Tournament and the Association management, it was decided not to have a tournament in connection with the Richmond meeting. It seemed unwise to attempt a tournament at this wartime meeting in Richmond.

GENERAL HEADQUARTERS

Registration, Meetings, Exhibits, Information, Mail, Etc.

Hotel John Marshall

The General Headquarters (Registration, Information, Mail, Etc.), located at the Hotel John Marshall, will be open on Tuesday, Wednesday and Thursday, November 10-12, from 8:00 a. m. until 6:00 p. m. Here will be issued badges and programs, and matters concerning dues, changes of address, errors, etc., will be given attention.

The Information Bureau and Convention Post Office will be in connection with the Registration Bureau. Competent persons will be in charge to give any information or serve physicians in any way possible. Ask anything you wish to know.

Be sure to register before attending the sessions.

Members of the Association are requested to bring their membership-receipt (blue) card and present it when registering. This will greatly facilitate the registration.

TECHNICAL EXHIBITS

Hotel John Marshall

At the Richmond meeting may be expected only the highest type group of technical, sometimes called commercial, exhibits attended by a group of specialized and courteous representatives who are concerned only with being of service to those physicians attending the meeting.

A policy adopted three years ago for making the exhibits more worth while has been generally accepted by the various commercial houses and personnel of the various booths will be found willing at every turn to keep the exhibits on a dignified plane.

The policy is concerned with (a) *selling*, (b) *samples* and (c) *souvenirs* and for clarification the following short explanation is given: (a) The atmosphere of the exhibit is to be that of show and demonstration and not of selling. Should a physician wish to purchase an item on display it is permissible for the exhibitor to take his order for the item either for delivery from the booth or to be sent later—the technical exhibits are for the benefit of the attending physicians. (b) Samples and literature may be displayed within the exhibit and may be given out at the exhibit when the desire for them is indicated. It is permissible for those calling at exhibits to have their names taken for samples and literature to be sent from the home office of the exhibitor. (c) Souvenirs of any description cannot be given away at any exhibit or at any point in the hotel.

The object is to make the Technical Exhibits more definitely a scientific and educational part of the Southern Medical Association meetings and therefore worth definitely more to attending physicians.

Be sure to visit the Technical Exhibits.

HOBBY EXHIBITS

Hotel John Marshall, Mezzanine Floor

In addition to the usual scientific activities of the Association, there is to be at Richmond a Hobby Exhibit. A delightful diversion from medicine to physicians' playthings is assured by this exhibit of physicians who are amateur artists, sculpturers, photographers, collectors, *et cetera*. Dr. Warren T. Vaughan, 201 West Franklin Street, Richmond, is Chairman of Hobby Exhibits. Here follow the names of the physicians who have offered some of their hobby work for the exhibit:

ETHEL C. DUNHAM, Washington, D. C.: Water Color Paintings.

WALLACE RICHARD DUPREE (Pemberton Parker), Arnold, Mo.: Photographs.

JAMES O. FITZGERALD, JR., Richmond, Va.: Photographs.

LESLIE H. FRENCH, Washington, D. C.: Photographs.

WM. D. GILL, San Antonio, Tex.: Paintings in Oil.

M. GROVE-HAGEN, Richmond, Va.: Wood Carving.

NORMAN R. SHULACK, Captain, Medical Corps, U. S. Army, Fort Benning, Ga.: Pastel Painting.

CARROL C. TURNER, Memphis, Tenn.: Photographs.

WARREN T. VAUGHAN, Richmond, Va.: Photographs.

J. I. WARING, Charleston, S. C.: Medical Caricatures.

SCIENTIFIC EXHIBITS

Hotel John Marshall, Mezzanine Floor

Exhibits will be open Tuesday, Wednesday and Thursday, November 10-12, from 8:00 a. m. until 6:00 p. m. In this Preliminary Program the exhibits are listed alphabetically. In the Official Program they will be arranged according to scientific subjects.

L. D. ABBOTT, JR., G. W. JAMES III, and J. T. JARRETT, Medical College of Virginia, Richmond, Va.: Castration and Serum Phosphatases in Metastatic Prostatic Carcinoma.

AMERICAN MEDICAL ASSOCIATION, Council on Foods and Nutrition, Chicago, Ill., and NATIONAL RESEARCH COUNCIL, Food and Nutrition Board, Washington, D. C.: Dietary Deficiency Diseases.

AMERICAN OCCUPATIONAL THERAPY ASSOCIATION, Virginia Occupational Therapy Association (sponsor), Richmond, Va.: The Modern Use of Occupational Therapy.

FRANK L. APPERLY, Medical College of Virginia, Richmond, Va.: The Relation of Solar Radiation to Pernicious Anemia and Gastric Cancer.

DONALD B. ARMSTRONG and LOUIS I. DUBLIN, Metropolitan Life Insurance Company, New York, N. Y.: Rheumatic Fever.

ARMY MEDICAL MUSEUM, Office of the Surgeon General, U. S. Army, Washington, D. C.: Pathology of Epidemic Hepatitis.

WILLIAM BICKERS, Medical College of Virginia, Richmond, Va.: Dysmenorrhea.

VILRAY P. BLAIR and L. T. BYARS, Washington University School of Medicine, St. Louis, Mo.: Congenital and Developmental Malformations of the Mandible.

RALPH BOWEN, Houston, Tex.: The Story of the Asthmatic Child.

BRITISH INFORMATION SERVICES, New York, N. Y.: Britain's Wartime Nutrition.

CHILDREN'S BUREAU, U. S. Department of Labor, Washington, D. C.: Care of Children with Heart Disease Under the Social Security Act, Title V, Part II.

DAIRY COUNCIL OF RICHMOND, Richmond, Va.: Scientific Eating for Good Nutrition.

JOHN E. DEES, Duke University School of Medicine, Durham, N. C.: The Use of An Intrapelvic Coagulum in Pyelolithotomy.

AUSTIN I. DODSON, St. Elizabeth's Hospital, Richmond, Va.: Surgical Technic in Urology.

EVERETT IDRIS EVANS and MILTON J. HOOVER, Medical College of Virginia Hospital, Richmond, Va.: The Sulfonamide Ointment Treatment of Burns.

J. BROWN FARRIOR, Tampa, Fla. (Captain, Medical Corps, U. S. Army, Camp Robinson, Ark.): The Sub-labyrinthine Petrous Exenteration.

ERNST FISCHER, Medical College of Virginia, Richmond, Va.: Some Non-Cardiac Effects of Digitalis.

J. C. FORBES and E. I. EVANS, Medical College of Virginia, Richmond, Va.: Protective Action of Sulfanilamide Against Certain Liver Poisons.

WALTER FREEMAN and JAMES W. WATTS, George Washington University School of Medicine, Washington, D. C.: Prefrontal Lobotomy.

M. F. FREYDECK, Medical College of Virginia, Richmond, Va.: Modern Clinical Photography.

ROBERT B. GREENBLATT, University of Georgia School of Medicine, Augusta, Ga.: Testosterone Propionate Pellet Implantation in Females.

GRACE A. GOLDSMITH, Tulane University School of Medicine, New Orleans, La.: Studies of Niacin Excretion: Determination of Deficiency.

H. B. HAAG, Medical College of Virginia, Richmond, Va.: Absorption of Sulfonamides from the Peritoneal Cavity, Pleural Cavity and Gastro-intestinal Tract.

BELA HALPERT, University of Oklahoma School of Medicine, Oklahoma City, Okla.: Carcinoma of the Lung: Studies of Its Incidence.

EMIL J. C. HILDENBRAND, Georgetown University School of Medicine and Garfield Hospital, Washington, D. C.: Refrigeration Anesthesia.

FRED M. HODGES, L. O. SNEAD and R. A. BERGER, Richmond, Va.: A Defect in the Cardiac End of the Stomach Simulating Tumor.

A. P. HUDGINS, Charleston, W. Va.: The Sterile Couple.

LOUISE JONES (Technician) and RANDOLPH H. HOGE, Medical College of Virginia, Richmond, Va.: Cross Anatomy of Presacral and Facial Nerves.

KARL JOHN KARNAKY, Jefferson Davis Hospital, Houston, Tex.: Gynecological and Obstetrical Research: Stilbestrol, Hexestrol and Benzadrine Sulfate.

FRANK LEO LORIA, Tulane University School of Medicine, New Orleans, La.: Penetrating Abdominal Gunshot Wounds.

WILLIAM J. MALLORY and JOHN A. REED, Doctors Hospital, Washington, D. C.: Diabetic Feeding.

MINISTRY OF EDUCATION AND HEALTH OF BRAZIL, Malaria Service for the Northeast, Rio de Janeiro, Brazil: The Story of the Eradication of *Anopheles* (Myzomia) *Gambiae* from Brazil.

OFFICE OF CIVILIAN DEFENSE, Medical Division, Washington, D. C.: Emergency Medical Service for Civilian Defense: (1) General Information, and (2) Gas Defense.

J. DOUGLAS REID and F. W. SHAW, Medical College of Virginia, Richmond, Va.: Fungi of Medical Importance.

REGISTRY OF MEDICAL TECHNOLOGISTS, American Society of Clinical Pathologists, Muncie, Ind.: The Registration of Medical Technologists.

WALTER RIESE, Medical College of Virginia, Richmond, Va., in collaboration with Eastern State Hospital, Williamsburg, Va.: Neuropathology in State Hospitals.

SHEPPARD AND ENOCH PRATT HOSPITAL, Occupational Therapy Department, Towson, Md.: Occupational Therapy Activities at a Psychiatric Hospital.

ROBERT E. SEIBELS, Clinics of the South Carolina State Board of Health, Columbia, S. C.: Maternal Welfare in South Carolina.

TENNESSEE VALLEY AUTHORITY, Health and Safety Department, Chattanooga, Tenn.: Health Services for Forty Thousand War Workers.

UNITED STATES ARMY, Medical Corps, Office of the Surgeon General, Washington, D. C.: Information Regarding Personal and Personnel Problems of Physicians Entering Military Service.

U. S. WAR DEPARTMENT, Richmond Quartermaster Depot, Richmond, Va.: Army Emergency Rations, Including the C, D and K Rations (K known as the Parachute Ration).

UNITED STATES NAVY, Bureau of Medicine and Surgery, Office of the Surgeon General, Washington, D. C.: Aviation Medicine, Submarine Medicine, Tropical Medicine, Photo-Fluorography and Blood Substitutes.

UNITED STATES PUBLIC HEALTH SERVICE, Washington, D. C.: Venereal Disease Control in Industry.

J. ROSS VEAL and ROY KLEPSER, Georgetown University Medical School and Gallinger Municipal Hospital, Washington, D. C.: Pathology and Treatment of Frostbite of the Extremities.

VIRGINIA STATE DEPARTMENT OF HEALTH, Richmond, Va.: Activities of the Virginia State and Local Health Departments.

CHARLES S. WHITE, J. LLOYD COLLINS and JACOB J. WEINSTEIN, George Washington University School of Medicine and Gallinger Municipal Hospital, Washington, D. C.: Clinical Analysis of Blood Plasma.

HUGH HAMPTON YOUNG, Johns Hopkins Hospital, Baltimore, Md.: Specimens of Prostates Removed by Perineal Prostatectomy after One or More Transurethal Prostatic Resections: Specimens and Photographs of Cases with Prostatic Calculi.

MOTION PICTURES

Hotel John Marshall, Mezzanine Floor

It is anticipated that there will be a special motion picture program for the Richmond meeting, films to run Tuesday afternoon, Wednesday forenoon and afternoon, and Thursday forenoon, November 10-12. The Official Program for use at the meeting will give the complete program of motion pictures, showing time each film will run. There will be a voluntary period each day during which any film on the program will be run upon request. A film not on the program may be run upon request if approved by the management. Here follow alphabetically the motion picture films that have been offered for this program.

WM. MILTON ADAMS, University of Tennessee College of Medicine, Memphis, Tenn.: Compound Facial Injuries.

JAMES BARRETT BROWN and FRANK McDOWELL, Washington University School of Medicine, St. Louis, Mo.: A New Method of Internal Wire Fixation of Fractures of the Jaw.

DEAN H. ECHOLS and GUY A. CALDWELL, Tulane University School of Medicine, New Orleans, La.: Sciatic Pain Caused by Ruptured Intervertebral Disk.

WALTER FREEMAN and JAMES W. WATTS, George Washington University Hospital, Washington, D. C.: Prefrontal Lobotomy.

KARL JOHN KARNAKY, Jefferson Davis Hospital, Houston, Tex.: (1) Conization of Cervix: A Seven Year Study, (2) Leukorrhea: Its Causes and Treatment, and (3) Sterility: Its Causes and Treatment.

J. G. LYERLY, Jacksonville, Fla.: Prefrontal Lobotomy: Operative Procedure and Report of Cases.

V. B. PHILPOT, Houston, Miss.: (1) Cholecystectomy: Demonstrating Transverse Incision for Gallstones, (2) Ileostomy: Partial Obstruction of Ileum Due to Round Worms, and (3) Nephrectomy Through Abdominal Incision: Wilms' Tumor of Left Kidney.

CHARLES S. WHITE, J. LLOYD COLLINS and JACOB J. WEINSTEIN, George Washington University School of Medicine and Gallinger Municipal Hospital, Washington, D. C.: That Others Will Live.

HUGH HAMPTON YOUNG, James Buchanan Brady Urological Institute, Johns Hopkins Hospital, Baltimore, Md.: Surgery of the Prostate.

EXCERPTS FROM THE BY-LAWS

Sec. 3. Except by special order, the order of exercises, papers and discussions as set forth in the Official Program will be followed from day to day until it has been completed, and all papers omitted will be recalled in regular order.

Sec. 4. No address or paper before the Association, or any of its sections, except the addresses of the President and Orators, shall occupy more than twenty minutes in its delivery; and no member shall speak longer than five minutes, nor more than one time on any subject, provided each essayist be allowed ten minutes in which to close the discussion.

Sec. 5. All papers before the Association, or any of its sections, shall be the property of the Association. Each paper shall be deposited with the Secretary when read, or within ten days thereafter.

Sec. 6. No paper shall be published except upon recommendation of the Publication Committee, which shall consist of the Secretary as Chairman, with the Chairman and Secretary of each section as its constant members.

GENERAL SESSION

PRESIDENT'S NIGHT

Hotel John Marshall, Roof Garden

Tuesday, November 10, 8:00 p. m.

Patriotic Music.

Call to order by the Chairman of Committees on Arrangements, WYNDHAM B. BLANTON, Richmond.

Invocation, REV. BEN R. LACY, D.D., President, Union Theological Seminary, Richmond.

Address of Welcome from the Richmond Academy of Medicine, BEVERLEY R. TUCKER, President, Richmond.

Response to the Address of Welcome from the Southern Medical Association, CURTICE ROSSER, Member of Council from Texas, Dallas, Tex.

Introduction of President by the General Chairman.

Introduction of Presidents.

Presentation of Southern Medical Association's Research Medal to PERRIN H. LONG, Professor of Preventive Medicine, Johns Hopkins University School of Medicine, Baltimore, Maryland, "in recognition of his outstanding contributions to the knowledge of bacteriology and chemotherapy," the presentation to be made by the President, M. PINSON NEAL.

Address: "The Role of the Civilian Physician Taken Into the Army," FRED W. RANKIN, President, American Medical Association, and Colonel, Medical Corps, U. S. Army, Washington, D. C.

President's Address: "The Unknown Man in Medicine," M. PINSON NEAL, Columbia, Mo.

Report of Council and Election of Officers.

Installation of Incoming President, HARVEY F. GARRISON, Jackson, Miss.

Presentation of Past President's Medal to M. PINSON NEAL by R. J. WILKINSON, Chairman of the Council, Huntington, W. Va.

Announcements.

Adjournment for President's Reception and Ball.

Patriotic Music.

GENERAL CLINICAL SESSION

RICHMOND DAY

Tuesday, November 10, 9:30 a. m.

Hotel John Marshall, Roof Garden

MEDICINE

Presentations limited to twenty minutes with five minutes for questions.

D. D. Talley, Jr., Richmond, presiding

1. "Loeffler's Syndrome" (Lantern Slides), JAMES H. SMITH, Professor of Clinical Medicine, Medical College of Virginia, Richmond.
2. "The Medical Aspects of Esophageal Hiatus Hernia: A Review of 65 Cases" (Lantern Slides), WILLIAM H. HIGGINS, Professor of Clinical Medicine, Medical College of Virginia, Richmond.
3. "Diabetes," WILLIAM R. JORDAN, Richmond.
4. "Contact Dermatitis" (Lantern Slides), WARREN T. VAUGHAN, Richmond.
5. "The Consideration of the Factors in the Therapy of Dermatitis," THOMAS W. MURRELL, Professor of Dermatology and Syphilology, Medical College of Virginia, Richmond.
6. "Resistance to Disease in Childhood," BASIL B. JONES, Richmond.
7. "A Defect in the Cardiac End of the Stomach Simulating Tumor," FRED M. HODGES, L. O. SNEAD and R. A. BERGER, Richmond.
8. "The Clinical Significance of the Serum Proteins" (Lantern Slides), B. M. KAGAN, Richmond. (Lieutenant, Medical Corps, U. S. Army, Stark General Hospital, Charleston, South Carolina.)

Adjournment.

GENERAL CLINICAL SESSION

RICHMOND DAY

Tuesday, November 10, 2:00 p. m.

Hotel John Marshall, Roof Garden

SURGERY

Presentations limited to twenty minutes with five minutes for questions.

I. A. Bigger, Richmond, presiding

1. "The Modern Treatment of Burns" (Lantern Slides), EVERETT IDRIS EVANS, Medical College of Virginia, Department of Surgery, Richmond.
2. "Recent Advances in the Study of Cancer" (Lantern Slides), J. SHELTON HORSLEY, Richmond.
3. "The Relation of the Conjoint Tendon to the Permanent Cure of Inguinal and Femoral Hernia" (Lantern Slides), CHARLES R. ROBINS, Emeritus Professor of Gynecology, Medical College of Virginia, Richmond.
4. "Compound Fractures of the Skull" (Lantern Slides), C. C. COLEMAN, Professor of Neurological Surgery, Medical College of Virginia, Richmond.
5. "The Conservative Treatment of Fractures of Both Bones of the Lower Leg" (Lantern Slides), H. PAGE MAUCK, Professor of Clinical Orthopedic Surgery, Medical College of Virginia, Richmond.
6. "The Distribution of Pain in Lesions of the Upper Urinary Tract" (Lantern Slides), T. B. WASHINGTON, Richmond.
7. "Esophageal Voice of Laryngectomized Patients: A Demonstration of Cases, E. TRIBLE GATEWOOD, Associate Professor of Otolaryngology, Medical College of Virginia, Richmond.
8. "Sterility in the Female" (Lantern Slides), WM. DURWOOD SUGGS, Assistant Professor of Obstetrics and Gynecology, Medical College of Virginia, Richmond.

Adjournment.

GENERAL CLINICAL SESSION

RICHMOND DAY

Tuesday, November 10, 2:00 p. m.

Richmond Hotel, Ballroom

PEDIATRICS

American Academy of Pediatrics, Region 2

J. B. Stone, Richmond, presiding

1. "The Psychology of Acne," THOMAS W. MURRELL, Professor of Dermatology and Syphilology, Medical College of Virginia, Richmond.
2. "Flat Feet in Children" (Lantern Slides), H. PAGE MAUCK, Professor of Clinical Orthopedic Surgery, Medical College of Virginia, Richmond.
3. "Deformities of the Genito-Urinary Tract" (Lantern Slides), AUSTIN I. DODSON, Professor of Urology, Medical College of Virginia, Richmond.
4. "Applied Hematology in the Practice of Pediatrics," J. HAMILTON SCHERER, Assistant Professor of Medicine, Medical College of Virginia, Richmond.
5. "Brain Tumors in Children: Roentgen Diagnosis and Therapy" (Lantern Slides), FREDK. B. MANDEVILLE, Professor of Radiology, Medical College of Virginia, Richmond.
6. "Acute Respiratory Obstruction in Infants and Children," LEE E. SUTTON, JR., Professor of Pediatrics, Medical College of Virginia, Richmond.

Adjournment.

SECTION ON GENERAL PRACTICE

Y W C A Auditorium

Officers

Chairman—W. J. Lackey, Fallston, N. C.
Vice-Chairman—W. L. Pressly, Due West, S. C.
Secretary—B. A. Hopkins, Stuart, Va.
Hosts from the Richmond Academy of Medicine—G. R. Maloney, Turner S. Shelton and O. C. Brunk.

Wednesday, November 11, 9:00 a. m.

Y W C A Auditorium

1. "The Treatment of Minor Injuries and Early Treatment of Major Injuries," R. A. MOORE, Winston-Salem, N. C.
   Discussion opened by Hugh A. Thompson, Raleigh, N. C.; H. Page Mauck, Richmond, Va.
2. "Pretibial Fever: Description of an Outbreak of an Obscure Disease," WORTH B. DANIELS, Lieutenant Colonel, Medical Corps, U. S. Army, and H. ARTHUR GRENNAN, Captain, Medical Corps, U. S. Army, Fort Bragg, N. C.
   Discussion opened by Norman H. Topping, Passed Assistant Surgeon, United States Public Health Service, Washington, D. C.; Henry M. Thomas, Jr., Baltimore, Md. (Lieutenant Colonel, Medical Corps, U. S. Army, Atlanta, Georgia.)

3. "Causes for Unsuccessful Sulfonamide Therapy of Pneumonia," HARRISON F. FLIPPIN, Associate in Medicine, University of Pennsylvania Schools of Medicine, Philadelphia, Pa.

   Discussion opened by Henry B. Mulholland, Charlottesville, Va.; Wm. B. Porter, Richmond, Va.

4. "Endocrinology in General Practice" (Lantern Slides), J. K. FANCHER, Atlanta, Ga.

   Discussion opened by Daniel L. Sexton, St. Louis, Mo.; Howard R. Masters, Richmond, Va.

5. "Pellagra, Pernicious Anemia and Sprue—Allied Nutritional Diseases," SEALE HARRIS, Birmingham, Ala.

   Discussion opened by Julian M. Ruffin, Durham, N. C.; Maxwell R. Berry, Jr., Richmond, Va.

6. "Civilian Medical Care in Total War," THOMAS PARRAN, Surgeon General, U. S. Public Health Service, Washington, D. C.

   Discussion opened by Arthur T. McCormack, State Health Commissioner, Louisville, Ky.; I. C. Riggin, State Commissioner of Health, Richmond, Va.

Election of Officers.

SECTION ON MEDICINE

Hotel John Marshall, Roof Garden

Officers

Chairman—Moise D. Levy, Houston, Tex.
Vice-Chairman—Drew W. Luten, St. Louis, Mo.
Secretary—William H. Kelley, Charleston, S. C.

Hosts from the Richmond Academy of Medicine—James H. Smith, T. Dewey Davis and H. Wallace Blanton.

Wednesday, November 11, 2:00 p. m.

Hotel John Marshall, Roof Garden

1. "Peptic Ulcer in the Army," HENRY M. THOMAS, JR., Baltimore, Md. (Lieutenant Colonel, Medical Corps, U. S. Army; Medical Consultant, Fourth Service Command, Atlanta, Ga.)

2. "Acute Porphyria" (Lantern Slides and Motion Pictures), CECIL J. WATSON, Professor of Medicine, University of Minnesota Medical School, Minneapolis, Minn.

3. "Emaciation and Endocrine Dysfunction" (Lantern Slides), DANIEL L. SEXTON, St. Louis, Mo.

   Discussion opened by H. Wallace Blanton, Richmond, Va.

4. "Ventricular Tachycardia as a Therapeutic Problem in Coronary Thrombosis" (Lantern Slides), ROBERT L. McMILLAN, Winston-Salem, N. C.

   Discussion opened by Wm. B. Porter, Richmond, Va.

5. "The Intravenous Use of Cardiac Glucosides" (Lantern Slides), JOHN S. LaDUE, New Orleans, La.

   Discussion opened by Tinsley R. Harrison, Winston-Salem, North Carolina.

6. "Acute Hemolytic Anemia in Fertilizer Workers: A New Industrial Hazard," ROBERT WILSON, JR., Charleston, South Carolina.

   Discussion opened by Wm. M. Nicholson, Durham, N. C.

7. "The Incidence and Recognition of Riboflavin and Niacin Deficiency in Medical Diseases" (Lantern Slides), GRACE A. GOLDSMITH, New Orleans, La.

   Discussion opened by Wm. H. Sebrell, Jr., U. S. Public Health Service, Washington, D. C.

Election of Officers.

SECTION ON GASTROENTEROLOGY

Second Presbyterian Church, Primary Department

Officers

Chairman—Donovan C. Browne, New Orleans, La.
Vice-Chairman—Porter P. Vinson, Richmond, Va.
Secretary—Julian M. Ruffin, Durham, N. C.

Hosts from the Richmond Academy of Medicine—Oscar Hite, Manfred Call III and Douglas G. Chapman.

Thursday, November 12, 9:00 a. m.

Second Presbyterian Church, Primary Department

1. Chairman's Address: "The Patient Following Gastric Surgery" (Lantern Slides), DONOVAN C. BROWNE, New Orleans, La.

2. "Alcohol and Cirrhosis of the Liver" (Lantern Slides), RUSSELL S. BOLES, Philadelphia, Pa.

   Discussion opened by T. Dewey Davis, Richmond, Va.

3. "Traumatic Lesions of the Abdomen," CARRINGTON WILLIAMS, Richmond, Va.

   Discussion opened by William F. Rienhoff, Jr., Baltimore, Md.; Keith Sanford Grimson, Durham, N. C.

SYMPOSIUM ON GASTROENTEROLOGY IN RELATION TO THE WAR

4. "The Control of Endemic and Epidemic Diarrhea" (Lantern Slides), DWIGHT M. KUHNS, Lieutenant Colonel, Medical Corps, U. S. Army, Lawson General Hospital, Atlanta, Ga.

5. "Military Gastroenterology: The First Year" (Lantern Slides), DONALD T. CHAMBERLIN, Major, Medical Corps, U. S. Army, Lawson General Hospital, Atlanta, Ga.

6. "Functional Digestive Disease in an Army General Hospital," JOSEPH SKOBBA, Major, Medical Corps, U. S. Army, Chief of Neuropsychiatric Service, Lawson General Hospital, Atlanta, Ga.

   Discussion on Symposium opened by Andrew D. Hart, Charlottesville, Va. (Major, Medical Corps, U. S. Army, Camp Lee, Va.); Ernest H. Gaither, Baltimore, Md.; Henry M. Thomas, Jr., Baltimore, Md. (Lieutenant Colonel, Medical Corps, U. S. Army, Atlanta, Ga.).

Election of Officers.

Thursday, November 12, 12:30 noon

Luncheon, Hotel John Marshall

Porter P. Vinson, Richmond, presiding

Luncheon Speaker, I. J. PINCUS, Philadelphia, Pa. (Lieutenant, Medical Corps, U. S. Army, Camp Lee, Va.), subject: "Gastrointestinal Disorders as Seen at an Army Station Hospital."

SECTION ON NEUROLOGY AND PSYCHIATRY

Second Presbyterian Church, Primary Department

Officers

Chairman—Guy F. Witt, Dallas, Tex.
Vice-Chairman—Theodore A. Watters, New Orleans, La.
Secretary—Cobb Pilcher, Nashville, Tenn.
Hosts from the Richmond Academy of Medicine—Howard R. Masters, Rex Blankinship, James Asa Shield and R. Finley Gayle, Jr.

Wednesday, November 11, 9:00 a. m.

Second Presbyterian Church, Primary Department

1. "Prefrontal Lobotomy: Six Years' Experience" (Lantern Slides), JAMES W. WATTS and WALTER FREEMAN, Washington, D. C.

   Discussion opened by J. G. Lyerly, Jacksonville, Fla.; Howard R. Masters, Richmond, Va.

2. "Congenital Cerebral Aneurysm Lateralized by Electro-Encephalography" (Lantern Slides), BARNES WOODHALL and HANS LOWENBACH, Durham, N. C.

   Discussion opened by Walter E. Dandy, Baltimore, Md.; C. G. Holland, Charlottesville, Va.

3. "The Actual Goal of Psychiatric Therapy," GREGORY ZILBOORG, New York, N. Y.

4. Chairman's Address: "Psychotherapy," GUY F. WITT, Dallas, Tex.

5. "Hypothalamic Implication in Psychosis" (Lantern Slides), H. S. RUBINSTEIN and SERGE ANDROP, Baltimore, Maryland.

   Discussion opened by Walter Freeman, Washington, D. C.; O. B. Darden, Richmond, Va.

6. "Problems Facing Our Selective Service," SPAFFORD ACKERLY, Louisville, Ky.

   Discussion opened by J. K. Hall, Richmond, Va.; David C. Wilson, Charlottesville, Va.

7. "A Comparative Study of Dilantin Sodium and Phenobarbital in Negro Epileptics," SOL B. McCLENDON, Columbia, S. C.

   Discussion opened by E. L. Horger, Columbia, S. C.; C. C. Coleman, Richmond, Va.

Election of Officers.

SECTION ON PEDIATRICS

Centenary Methodist Church, Sunday School Auditorium

Officers

Chairman—George M. Lyon, Huntington, W. Va.
Vice-Chairman—J. B. Stone, Richmond, Va.
Secretary—William Weston, Jr., Columbia, S. C.
Hosts from the Richmond Academy of Medicine—Samuel A. Anderson, Jr., Basil B. Jones and J. B. Stone.

Wednesday, November 11, 9:00 a. m.

Centenary Methodist Church, Sunday School Auditorium

1. "Etiological Factors Producing Difficulty in Beginning Respiration in Infants Delivered by Cesarean Section," ALLAN BLOXSOM, Houston, Tex.

   Discussion opened by W. W. Waddell, Jr., Charlottesville, Va.; Arthur London, Jr., Durham, N. C.

2. "Milk as a Cause of Clinical Entities," PRESTON A. McLENDON, Washington, D. C.

   Discussion opened by Jasper Stewart Hunt, Charlotte, N. C.; W. Ambrose McGee, Richmond, Va.

3. Chairman's Address: GEORGE M. LYON, Huntington, W. Va. (Commander, Medical Corps, USNR, U. S. Naval Unit, on Foreign Duty.)

4. "Progress Against Bacillary Dysenteries," HAVEN EMERSON, Emeritus Professor of Public Health Practice, Columbia University College of Physicians and Surgeons, New York, N. Y.

5. "Foods and Their Importance to the War Effort," WILLIAM HENRY SEBRELL, JR., Chief, Division of Chemotherapy, National Institute of Health, U. S Public Health Service, Washington, D. C.

   Discussion opened by Horton Casparis, Nashville, Tenn; William Weston, Columbia, S. C.

SYMPOSIUM ON CONGENITAL SYPHILIS

6. "Transmission and Diagnosis of Syphilis" (Lantern Slides), M. HINES ROBERTS, Atlanta, Ga.

7. "The Treatment of Congenital Syphilis with Acetarsone: Result of a Ten-Year Study," JAY M. ARENA, Durham, N. C.

   Discussion on Symposium opened by Joseph Yampolsky, Atlanta, Ga.; Frank R. Smith, Jr., Baltimore, Md.

Election of Officers.

Tuesday and Wednesday, November 10-11, 2:00 p. m.

Richmond Hotel, Ballroom

American Academy of Pediatrics, Region 2. See page 1042 for program.

Wednesday, November 11, 12:30 noon

Richmond Hotel, Ballroom

Joint Luncheon, Section on Pediatrics, Southern Medical Association and American Academy of Pediatrics, Region 2.

Wednesday, November 11, 7:30 p. m.

Richmond Hotel, Ballroom

Joint Dinner, Section on Pediatrics, Southern Medical Association, and American Academy of Pediatrics, Region 2.

SECTION ON PATHOLOGY

Second Presbyterian Church, Primary Department

Officers

Chairman—W. R. Mathews, Shreveport, La.
Vice-Chairman—R. H. Rigdon, Memphis, Tenn.
Secretary—Robert A. Moore, St. Louis, Mo.
Hosts from the Richmond Academy of Medicine—J. H. Scherer, F. L. Apperly and Richard C. Neale.

Wednesday, November 11, 2:00 p. m.

Second Presbyterian Church, Primary Department

1. Chairman's Address: "Acute Hematogenus Interstitial Nephritis," W. R. MATHEWS, Shreveport, La.

2. "Malignant Predominately Cystic Cerebral Tumor with Alveolar and Reticulum Forming Cells," C. R. TUTHILL, Charlottesville, Va., and JOHN M. MEREDITH, Richmond, Va.

   Discussion opened by John S. Howe, Richmond, Va.; C. C. Coleman, Richmond, Va.

3. "The Pathology of Epidemic Hepatitis" (Lantern Slides), BALDUIN LUCKE, Lieutenant Colonel, Medical Corps, U. S. Army, Washington, D. C.

4. "Bacterial Observations on Cases of Experimental Brucellosis in Dogs and Swine" (Lantern Slides), GRACE P. KERBY, IVAN W. BROWN, JR., GEORGE MARGOLIS and WILEY D. FORBUS, Durham, N. C.

5. "Electrophoretic and Kjeldahl Analysis of Proteins in Nephritic Urine" (Lantern Slides), SAM S. BLACKMAN and BERNARD D. DAVIS, Baltimore, Md.

6. "Bronchiogenic Carcinoma: A Case Diagnosed from Fixed Frozen Sections of Pleural Sediment" (Lantern Slides), D. R. VENABLE, Columbus, Ga.

Discussion opened by Roy R. Kracke, Atlanta, Ga.

Election of Officers.

SECTION ON RADIOLOGY

Second Presbyterian Church, Sunday School Auditorium

Officers

Chairman—Charles H. Peterson, Roanoke, Va.
Vice-Chairman—Lawther J. Whitehead, Richmond, Va.
Secretary—Karl F. Kesmodel, Birmingham, Ala.
Hosts from the Richmond Academy of Medicine—Fred M. Hodges, Lloyd Tabb and Daniel D. Talley.

Thursday, November 12, 2:00 p. m.

Second Presbyterian Church, Sunday School Auditorium

1. "Facial Fractures Seen in the Naval Service" (Lantern Slides), T. H. LIPSCOMB, Jacksonville, Fla. (Lieutenant, Medical Corps, U. S. Naval Reserve, Jacksonville, Fla.)

Discussion opened by Vincent W. Archer, Charlottesville, Va.

2. "Cholecystograph: A Correlation of the Roentgenological Surgical and Medical Findings in 355 Cases," HENRY J. WALTON and CHARLES N. DAVIDSON, Baltimore, Md.

Discussion opened by Fred M. Hodges, Richmond, Va.

3. "Radiation and Surgery in the Management of Ovarian Carcinoma" (Lantern Slides), D. Y. KEITH, Louisville, Kentucky.

Discussion opened by Wright Clarkson, Petersburg, Va.

4. "X-Ray Therapy of the Nasal Accessory Sinuses," FRED HAMES, Pine Bluff, Ark.

Discussion opened by Lloyd Tabb, Richmond, Va.

5. "Traumatic Lesions of the Urinary Tract" (Lantern Slides), FRED O. COE, Washington, D. C.

Discussion opened by Daniel D. Talley, Richmond, Va.

6. "Tertiary Syphilitic Bone Lesions" (Lantern Slides), HERBERT C. FRANCIS and R. H. KAMPMEIER, Nashville, Tenn.

Discussion opened by L. O. Snead, Richmond, Va.

Election of Officers.

SECTION ON DERMATOLOGY AND SYPHILOLOGY

Centenary Methodist Church, Sunday School Auditorium

Officers

Chairman—M. T. Van Studdiford, New Orleans, La.
Vice-Chairman—Garold V. Stryker, St. Louis, Mo.
Secretary—J. Lamar Callaway, Durham, N. C.
Hosts from the Richmond Academy of Medicine—Richard W. Fowlkes and Thomas W. Murrell.

Wednesday, November 11

10:00 a. m.-12:30 noon—Dermatology Clinic, Outpatient Department, Medical College of Virginia. 1:00-2:00 p. m.—Luncheon at Hunton Hall. 2:00-5:00 p. m.—Discussion of Cases, Medical College of Virginia Clinic Building. 8:00 p. m.—Section Dinner, Commonwealth Club.

Thursday, November 12, 9:00 a. m.

Centenary Methodist Church, Sunday School Auditorium

1. Chairman's Address: "Intestinal Parasites and Skin Diseases," M. T. VAN STUDDIFORD, New Orleans, La.

2. "Chromomycosis (Chromoblastomycosis): Report of Two Cases" (Lantern Slides), ZOLA COOPER (Ph.D.), MORRIS MOORE (Ph.D.) and RICHARD S. WEISS, St. Louis, Mo.

Discussion opened by Thomas W. Murrell, Richmond, Va.

3. "Vitamin Therapy in Dermatology" (Lantern Slides), DAVID T. SMITH, Durham, N. C.

4. "Hemorrhagic Basal Cell Tumors" (Lantern Slides), JOHN H. LAMB, Oklahoma City, Okla.; CHAS. F. GESCHICKTER, Baltimore, Md.; and EVERETT S. LAIN, Oklahoma City, Okla.

Discussion opened by Howard Hailey, Atlanta, Ga.

5. (a) "Cutaneous Reactions Due to Phenytoin Sodium, Nirvanol and Phenobarbital" and (b) "Phenytoin Sodium as a Possible Etiologic Factor in a Case of Ectodermosis Erosiva Pluriorificalis," FRANCIS A. ELLIS, Baltimore, Maryland.

Discussion opened by Herbert S. Alden, Atlanta, Ga.

6. "The Postarsphenamine Lichen-Planus-Like Exanthem" (Lantern Slides), M. H. GOODMAN and MAURICE SULLIVAN, Baltimore, Md.

Discussion opened by Dudley C. Smith, Charlottesville, Va.

7. "Patch Tests: Their Practical Applications and Limitations," LEON H. WARREN, Major, Medical Corps, U. S. Army, Office of the Surgeon General, Washington, D. C.

Discussion opened by Raymond D. Kimbrough, Norfolk, Va.

Election of Officers.

SECTION ON ALLERGY

Centenary Methodist Church, Sunday School Auditorium

Officers

Chairman—C. Malone Stroud, St. Louis, Mo.
Vice-Chairman—Clarence K. Weil, Montgomery, Ala.
Secretary—L. O. Dutton, El Paso, Tex.
Hosts from the Richmond Academy of Medicine—Warren T. Vaughan, W. Randolph Graham and W. Ambrose McGee.

Thursday, November 12, 2:00 p. m.

Centenary Methodist Church, Sunday School Auditorium

1. Chairman's Address: "The Yardstick of Allergic Therapy," C. MALONE STROUD, St. Louis, Mo.

2. "The Significance of Fetal Hiccough," W. AMBROSE McGEE, Richmond, Va.

Discussion opened by Ralph Bowen, Houston, Tex.

3. "The Natural History of Asthma" (Lantern Slides), FRANCIS M. RACKEMANN, Boston, Mass.

4. "Cardiovascular Allergy" (Lantern Slides), HAL M. DAVISON, JAMES C. THOROUGHMAN and HAROLD BOWCOCK, Atlanta, Ga.

Discussion opened by Alan Cazort, Little Rock, Ark.

5. "Observations on Autopassive Sensitization and Desensitization," OSCAR SWINEFORD, JR., and W. ROY MASON, JR., Charlottesville, Va.

Discussion opened by Warren T. Vaughan, Richmond, Va.

Election of Officers.

SECTION ON PHYSICAL THERAPY

Second Presbyterian Church, Upstairs Sunday School Room

Officers

Chairman—F. H. Ewerhardt, St. Louis, Mo.
Vice-Chairman—Euclid M. Smith, Hot Springs National Park, Ark.
Secretary—Ben L. Boynton, Norfolk, Va.
Host from the Richmond Academy of Medicine—J. O. Fitzgerald, Jr.

Thursday, November 12, 2:00 p. m.

Second Presbyterian Church, Upstairs Sunday School Room

1. Chairman's Address: "Modern Interpretation of Physical Therapy," F. H. EWERHARDT, St. Louis, Mo.

2. "Recent Developments in the Treatment of Poliomyelitis," ROBERT L. BENNETT, Warm Springs, Ga.

   Discussion opened by J. B. Dalton, Richmond, Va.

3. "Physical Therapy Measures in the Treatment of Peripheral Vascular Diseases," EMIL J. C. HILDENBRAND, Washington, D. C.

4. "Physical Therapy in the Treatment of Fractures," JOHN S. COULTER, Associate Professor and Chairman, Department of Physical Therapy, Northwestern University Medical School, Chicago, Ill.

   Discussion opened by Francis W. Glenn, Miami, Fla.; J. Blair Fitts, Richmond, Va.

5. "The Use and Abuse of Physical Therapy in Dermatology," HARRY M. ROBINSON, Baltimore, Md.

6. "Electrodiagnosis in Industrial Practice" (Lantern Slides and Motion Pictures), NATHAN H. POLMER, New Orleans, La.

Election of Officers.

SECTION ON SURGERY

Hotel John Marshall, Roof Garden

Officers

Chairman—R. L. Sanders, Memphis, Tenn.
Vice-Chairman—Fred W. Bailey, St. Louis, Mo.
Secretary—J. A. Crisler, Jr., Memphis, Tenn.
Hosts from the Richmond Academy of Medicine—Frank S. Johns, Stuart N. Michaux, I. A. Bigger and J. Shelton Horsley.

Wednesday, November 11, 9:00 a. m.

Hotel John Marshall, Roof Garden

1. "Chemotherapy in Surgery" (Lantern Slides), J. ROSS VEAL, Washington, D. C.

   Discussion opened by John E. Cannaday, Charleston, West Va.; Harvey B. Haag, Richmond, Va.

2. "Cysts of the Spleen" (Lantern Slides), J. W. SNYDER and PHILLIPP REZEK, Miami, Fla.

   Discussion opened by I. A. Bigger, Richmond, Va.; Harry J. Warthen, Richmond, Va.

3. "Penetrating Gunshot Wounds of the Abdomen" (Lantern Slides), FRANK L. LORIA, New Orleans, La.

   Discussion opened by Elkin L. Rippy, Nashville, Tenn.; Carrington Williams, Richmond, Va.

4. "The Influence of the Antral Mucosa on the Results Following Surgical Procedures for Duodenal Ulcer" (Lantern Slides and Motion Pictures), ARTHUR W. ALLEN, Chief of the East Surgical Service, Massachusetts General Hospital, and Lecturer in Surgery, Harvard Medical School, Boston, Mass.

5. "Minimal Resection of the Stomach for the Treatment of Peptic Ulcer" (Motion Pictures), WILLIAM F. RIENHOFF, JR., Baltimore, Md.

   Discussion opened by J. Shelton Horsley, Richmond, Va.; Frank S. Jones, Richmond, Va.

6. Chairman's Address: "Trails and Trends in Abdominal Surgery," R. L. SANDERS, Memphis, Tenn.

Election of Officers.

SECTION ON BONE AND JOINT SURGERY

Second Presbyterian Church, Sunday School Auditorium

Officers

Chairman—Guy W. Leadbetter, Washington, D. C.
Vice-Chairman—John D. Sherrill, Birmingham, Ala.
Secretary—Winthrop M. Phelps, Baltimore, Md.
Hosts from the Richmond Academy of Medicine—H. Page Mauck, Thomas Beath and James T. Tucker.

Wednesday, November 11, 2:00 p. m.

Second Presbyterian Church, Sunday School Auditorium

1. "Rhizomelic Spondylosis (Marie-Strumpell Arthritis): Roentgenotherapy and Orthopedic Correction of Deformities," LENOX D. BAKER, Durham, N. C.

   Discussion opened by Robt. W. Johnson, Jr., Baltimore, Md.

2. "Smith-Petersen Nail Fixation in Hip Disease" (Lantern Slides), J. WARREN WHITE, Greenville, S. C.

3. Chairman's Address: "Old Wine in New Bottles," GUY W. LEADBETTER, Washington, D. C.

4. "Orthopedic Problems at a Naval Air Station," E. L. JEWETT, Orlando, Fla. (Lieutenant Commander, Medical Corps, USNR, United States Naval Air Station, Jacksonville, Fla.), and HERSCHEL PENN, Knoxville, Tenn. (Lieutenant, Medical Corps, USNR, United States Naval Air Station, Jacksonville, Fla.)

   Discussion opened by Frank L. Fort, Jacksonville, Fla.

5. "The Results of Meniscectomy in Soldiers," A. SCOTT HAMILTON, Monroe, La. (Major, Medical Corps, U. S. Army, Chief of Surgical Service, Station Hospital, Camp Claiborne, La.)

6. "Anatomical and Mechanical Features of Treatment of Fractures of the Humerus" (Lantern Slides), WALTER G. STUCK, San Antonio, Tex.

   Discussion opened by Howard A. Swart, Charleston, W. Va.

Election of Officers.

SECTION ON GYNECOLOGY

Hotel John Marshall, Roof Garden

Officers

Chairman—W. O. Johnson, Louisville, Ky.
Vice-Chairman—Willard M. Allen, St. Louis, Mo.
Secretary—John T. Sanders, New Orleans, La.
Hosts from the Richmond Academy of Medicine—Charles R. Robins and Randolph H. Hoge.

Thursday, November 12, 2:00 p. m.

Hotel John Marshall, Roof Garden

1. Chairman's Address: "Vaginal Biopsy Studies after Total Hysterectomy" (Lantern Slides), W. O. JOHNSON, Louisville, Ky. (Major, Medical Corps, U. S. Army, Station Hospital, Fort Knox, Ky.)

2. "Referred Pelvic Pain" (Lantern Slides), WILLIAM F. MENGERT, Associate Professor of Obstetrics and Gynecology, State University of Iowa College of Medicine, Iowa City, Iowa.

3. "The Treatment of Amenorrhea with Progesterone and Anhydrophydroxy Progesterone," SAMUEL D. SOULE and WILLARD M. ALLEN, St. Louis, Mo.

   Discussion opened by Robert B. Greenblatt, Augusta, Ga.

4. "The Present Status of Gynecological Organotherapy," EMIL NOVAK, Baltimore, Md.

   Discussion opened by H. Hudnall Ware, Jr., Richmond, Va.

5. "Premenstrual Cystitis," LUCIEN A. LEDOUX, New Orleans, La.

   Discussion opened by John F. Lucas, Greenwood, Miss.

6. "Dysmenorrhea" (Lantern Slides), WILLIAM M. BICKERS, Richmond, Va.

   Discussion opened by M. Y. Dabney, Birmingham, Ala.

7. "Tuberculosis of Reproductive Organs of the Female" (Lantern Slides), W. NICHOLSON JONES, Birmingham, Ala.

   Discussion opened by Benjamin H. Gray, Richmond, Va.

Election of Officers.

SECTION ON OBSTETRICS

Hotel John Marshall, Roof Garden

Officers

Chairman—Robert E. Seibels, Columbia, S. C.
Vice-Chairman—R. A. White, Asheville, N. C.
Secretary—Howard P. Hewitt, Chattanooga, Tenn.
Hosts from the Richmond Academy of Medicine—M. Pierce Rucker, Benj. H. Gray and H. Hudnall Ware, Jr.

Thursday, November 12, 9:00 a. m.

Hotel John Marshall, Roof Garden

1. Chairman's Address: "Obstetric Problems in the Rural South," ROBERT E. SEIBELS, Columbia, S. C.

2. "Modern Procedures in Obstetric and Gynecologic Practice," ROBERT M. LEWIS, Assistant Professor of Obstetrics and Gynecology, Yale University School of Medicine, New Haven, Conn.

3. "Some Observations on the Use of Nicotinic Acid Amide as an Adjunct in Obstetric Analgesia," J. RANDOLPH PERDUE, Miami, Fla.

   Discussion opened by M. Pierce Rucker, Richmond, Va.; H. Hudnall Ware, Jr., Richmond, Va.

4. "The Experience of the Johns Hopkins Hospital with Breech Presentation: An Analysis of 1,400 Cases," WILLIAM T. MOORE and PHILIP P. STEPTOE, JR., Baltimore, Md.

   Discussion opened by N. J. Eastman, Baltimore, Md.

5. "Influence of the War on Obstetrics," HARRY JENKINS, Knoxville, Tenn. (Major, Medical Corps, U. S. Army, Fort Oglethorpe, Ga.)

6. "Ruptured Uterus: Two Cases with Recovery," WILLIAM T. BLACK, JR., Memphis, Tenn. (Lieutenant, Medical Corps, V(S), USNR, Chicago, Ill.)

   Discussion opened by James L. Gillard, Lieutenant, Medical Corps, USNR.

7. "Postpartum Sterilization: Indications and Results" (Lantern Slides and Motion Pictures), FRANK R. LOCK, NELSON M. WEBSTER and RICHARD C. FORMAN, Winston-Salem, N. C.

   Discussion opened by Bayard Carter, Durham, N. C.; F. O. Plunkett, Lynchburg, Va.

Election of Officers.

SECTION ON UROLOGY

Y W C A Auditorium

Officers

Chairman—J. Ullman Reaves, Mobile, Ala.
Vice-Chairman—Helmuth H. Kramolowsky, St. Louis, Mo.
Secretary—Austin I. Dodson, Richmond, Va.
Hosts from the Richmond Academy of Medicine—T. B. Washington, Donald S. Daniel and Austin I. Dodson.

Wednesday, November 11, 2:00 p. m.

Y W C A Auditorium

1. "Surgery in Congenital Anomalous Kidneys" (Lantern Slides), B. S. ABESHOUSE, Baltimore, Md.

2. "Surgery of the Kidney in Renal Calculus" (Lantern Slides), MONTAGUE L. BOYD, Atlanta, Ga.

3. "The Use of an Intrapelvic Coagulum in Pyelolithotomy: Preliminary Report" (Lantern Slides), JOHN E. DEES, Durham, N. C.

   Discussion opened by Linwood D. Keyser, Roanoke, Va.

4. "Hypertonic Salt Solution Enemas in the Elimination of Gas from the Gastro-Intestinal Tract Preliminary to Urological Roentgen Examination," HJALMAR E. CARLSON, Kansas City, Mo.

   Discussion opened by W. M. Coppridge, Durham, N. C.

5. "Prostatic Cancer: An Evaluation of Treatment by Castration" (Lantern Slides and Kodachrome Demonstration), ERNEST RUPEL, Indianapolis, Ind.

   Discussion opened by Ray M. Bobbitt, Huntington, W. Va.

6. Chairman's Address: "Movable Kidney" (Lantern Slides), J. ULLMAN REAVES, Mobile, Ala.

7. "Ureteritis Complicating Nephroptosis" (Lantern Slides), RUDOLPH BELL, Thomasville, Ga.

8. "Evaluating the Ureteral Splint" (Lantern Slides), ROBERT F. SHARP, New Orleans, La.

   Discussion opened by Hamilton W. McKay, Charlotte, N. C.

Election of Officers.

SECTION ON PROCTOLOGY

Second Presbyterian Church, Primary Department

Officers

Chairman—Raymond L. Murdoch, Oklahoma City, Okla.
Vice-Chairman—William J. Martin, Jr., Louisville, Ky.
Secretary—W. K. McIntyre, St. Louis, Mo.
Hosts from the Richmond Academy of Medicine—Emmett H. Terrell and W. W. Rixey.

Thursday, November 12, 2:00 p. m.

Second Presbyterian Church, Primary Department

1. "Relief of Pain Following Anorectal Surgery," TOM E. SMITH, Dallas, Tex. (Captain, Medical Corps, U. S. Army, Brooke General Hospital, Fort Sam Houston, Tex.)

   Discussion opened by Geo. H. Thiele, Kansas City, Mo.; Geo. F. Eubanks, Atlanta, Ga.

2. Chairman's Address: "Cancer of the Left Colon and Rectum" (Lantern Slides), RAYMOND L. MURDOCH, Oklahoma City, Okla.

3. "The Practical Solution of Some Common Anorectal Problems" (Lantern Slides), NEWTON D. SMITH, Associate Professor of Proctology, University of Minnesota Graduate School of Medicine, Rochester, Minn.

   Discussion opened by Emmett H. Terrell, Richmond, Va.; Wm. J. Martin, Jr., Louisville, Ky.; Marion C. Pruitt, Atlanta, Ga.

4. "Cancer of the Rectum: Preoperative and Postoperative Complications" (Lantern Slides), J. L. JELKS, Memphis, Tennessee.

   Discussion opened by Curtice Rosser, Dallas, Tex.; Wm. H. Daniel, Los Angeles, Calif.; W. K. McIntyre, St. Louis, Missouri.

5. "The Proctologic Significance of Diarrhea," H. G. HUMMEL, Little Rock, Ark.

   Discussion opened by J. L. Jelks, Memphis, Tenn.; Raymond L. Murdoch, Oklahoma City, Okla.

6. "The Postoperative Management of Anal Surgery," GEO. F. EUBANKS, Atlanta, Ga.

Discussion opened by Frederick B. Campbell, Kansas City, Mo.; Newton D. Smith, Rochester, Minn.

Election of Officers.

SECTION ON OPHTHALMOLOGY AND OTOLARYNGOLOGY

Second Presbyterian Church, Sunday School Auditorium

Officers

Chairman—L. Chester McHenry, Oklahoma City, Okla.
Chairman-Elect—John H. Burleson, San Antonio, Tex.
Vice-Chairman—W. Raymond McKenzie, Baltimore, Md.
Secretary—J. W. Jervey, Jr., Greenville, S. C.

Hosts from the Richmond Academy of Medicine—Robert H. Courtney, Clifton M. Miller, E. Trible Gatewood and E. U. Wallerstein.

Wednesday, November 11, 9:00 a. m.

Second Presbyterian Church, Sunday School Auditorium

1. "Molluscum Contagiosum of the Eye" (Lantern Slides), LOUIS A. JULIANELLE (Ph.D.) and WM. M. JAMES, St. Louis, Mo.

2. "The Effect on Hearing of Acoustic Trauma in Industry and War" (Lantern Slides), SAMUEL L. FOX, Baltimore, Maryland.

Discussion opened by M. L. Breitstein, Baltimore, Md.; Edward A. Looper, Baltimore, Md.

3. Chairman's Address: "Some Observations on the Maxillary Sinuses," L. CHESTER McHENRY, Oklahoma City, Okla.

4. "The Role of Sinusitis in Human Pathology" (Lantern Slides), M. M. CULLOM, Nashville, Tenn.

5. "An Evaluation of Some Early Otogenic Complications" (Lantern Slides), W. B. WOODSON, Temple, Tex.

Discussion opened by E. H. Cary, Dallas, Tex.

6. "Laryngeal Carcinoma—Laryngectomy" (Motion Pictures), MURDOCK EQUEN, Atlanta, Ga.

7. "Compensatory Divergent Strabismus: Its Etiology and Treatment" (Lantern Slides), C. A. CLAPP, Baltimore, Md.

Discussion opened by Ernest A. W. Sheppard, Washington, District of Columbia.

Thursday, November 12, 9:00 a. m.

Second Presbyterian Church, Sunday School Auditorium

8. "Parinaud's Oculoglandular Syndrome," F. H. McGOVERN, Danville, Va.

Discussion opened by Robert H. Courtney, Richmond, Va.

9. "Early Diagnosis of Carcinoma of Esophagus" (Lantern Slides), FLETCHER D. WOODWARD, Charlottesville, Virginia.

Discussion opened by Porter P. Vinson, Richmond, Va.; I. A. Bigger, Richmond, Va.

10. "Ocular Motility, Then and Now," WM. THORNWALL DAVIS, Washington, D. C.

11. "Congenital Anopsia with Maternal Cornical Cornege" (Lantern Slides), ROBIN HARRIS, Jackson, Miss.

12. "The Recognition and Radium Treatment of Nasopharyngeal Lymphoid Tissue" (Lantern Slides), GILBERT E. FISHER, Birmingham, Ala.

13. "Radium Therapy in the Treatment of Deafness" (Lantern Slides), J. BROWN FARRIOR, Tampa, Fla. (Captain, Medical Corps, U. S. Army, Camp Robinson, Ark.)

Discussion on papers of Dr. Fisher and Dr. Farrior opened by Harvey B. Searcy, Tuscaloosa, Ala.; F. B. Blackmar, Columbus, Ga.; E. Trible Gatewood, Richmond, Va.

Election of Officers.

SECTION ON ANESTHESIA

Centenary Methodist Church, Sunday School Auditorium

Officers

Chairman—Russell F. Bonham, Houston, Tex.
Vice-Chairman—Merrill C. Beck, New Orleans, La.
Secretary—John Adriani, New Orleans, La.

Hosts from the Richmond Academy of Medicine—Hobart Reed, I. H. Goldman and E. I. Evans.

Wednesday, November 11, 2:00 p. m.

Centenary Methodist Church, Sunday School Auditorium

1. Chairman's Address: "The Changing Status of Anesthesia in Civilian Practice During the War," RUSSELL F. BONHAM, Houston, Tex.

2. "The Effects of Repeated Administrations of Cyclopropane on Tissues," LEWIS H. WRIGHT, New York, N. Y.

Discussion opened by John Adriani, New Orleans, La.

3. "The Obstetrical Use of Sodium Pentothal," L. M. HELLMAN, L. B. SHETTLES and C. P. MANAHAN, Baltimore, Md.

4. "Cesarean Sections Under Pontocaine Spinal Anesthesia" (Lantern Slides), ALFRED HABEEB and HIRAM R. ELLIOTT, Fairfield, Ala.

5. "Pentothal Sodium in Major Surgical Procedures," JULIUS HOLLY, Pikesville, Md.

Discussion opened by Merrill C. Beck, New Orleans, La.

Election of Officers.

SECTION ON MEDICAL EDUCATION AND HOSPITAL TRAINING

Centenary Methodist Church, Sunday School Auditorium

Officers

Chairman—Lee E. Sutton, Jr., Richmond, Va.
Vice-Chairman—Charles H. Neilson, St. Louis, Mo.
Secretary—John W. Spies, Galveston, Tex.

Hosts from the Richmond Academy of Medicine—William B. Porter, Lewis E. Jarrett and W. T. Sanger.

Tuesday, November 10, 2:00 p. m.

Centenary Methodist Church, Sunday School Auditorium

At the time the JOURNAL went to press the program for this section had not been received.

SECTION ON PUBLIC HEALTH

Y M C A Auditorium

Officers

Chairman—I. C. Riggin, Richmond, Va.
Vice-Chairman—R. E. Fox, Raleigh, N. C.
Secretary—Hugh R. Leavell, Louisville, Ky.

Hosts from the Richmond Academy of Medicine—Charles L. Outland and Millard Hanson.

Thursday, November 12, 9:00 a. m.

Y M C A Auditorium

1. Chairman's Address: "Health Service in the War Effort," I. C. RIGGIN, State Commissioner of Health, Richmond, Virginia.

2. "Public Health Hazards in Rural Communities," C. F. McCLINTIC, State Health Commissioner, and A. M. PRICE, State Epidemiologist, Charleston, W. Va.

Discussion opened by F. M. Caudill, State Epidemiologist,

Louisville, Ky.; J. C. Knox, Director, Division of Epidemiology, North Carolina State Board of Health, Raleigh, N. C.

3. "Medical and Nutritional Survey of Eight Hundred N Y A Youths" (Lantern Slides), I. H. MANNING, JR., Durham, N. C. (Captain, Medical Corps, U. S. Army, Fort Bragg, N. C.), and D. F. MILAM, International Health Division, Rockefeller Foundation, Chapel Hill, N. C.

4. "Factors in Resistance to Tuberculosis as Revealed by a Case Finding Program" (Lantern Slides), LELAND W. PARR, Professor of Bacteriology, George Washington University School of Medicine, Washington, D. C.

Discussion opened by Jacques P. Gray, Dean, Medical College of Virginia, Richmond, Va.; Charles A. R. Connor, New York, N. Y. (First Lieutenant, Medical Corps, U. S. Army, School of Aviation Medicine, Randolph Field, Tex.)

5. "Pediculosis Treatment Among School Children in the District of Columbia," JOSEPH A. MURPHY, District of Columbia Health Department, Washington, D. C.

6. "Preventive and Public Health Aspects of Rheumatic Fever in Children" (Lantern Slides), LOUISE F. GALVIN, Crippled Children's Bureau, Virginia State Health Department, Richmond, Va.

Discussion opened by Chas. L. Outland, Medical Director of Public Schools, Richmond, Va.

7. "A School Medical Program for the Duration," W. R. WILLARD, Deputy State Health Officer, Hagerstown, Md.

Election of Officers.

AMERICAN PUBLIC HEALTH ASSOCIATION
Southern Branch

Meeting Conjointly with Southern Medical Association

Headquarters: Jefferson Hotel

Meeting Place: Y M C A Auditorium

Officers

President—P. E. Blackerby, Louisville, Ky.
First Vice-President—Douglas L. Cannon, Montgomery, Ala.
Second Vice-President—(Mrs.) Ruth George, Columbia, S. C.
Third Vice-President—(Mr.) L. M. Clarkson, Atlanta, Ga.
Secretary-Treasurer—R. H. Hutcheson, Nashville, Tenn.

Hosts from the Richmond Academy of Medicine—I. C. Riggin and W. Brownley Foster.

Wednesday, November 11, 9:00 a. m.

Y M C A Auditorium

GENERAL SESSION

P. E. Blackerby, President, presiding

1. President's Address: "The Health Officer's Public and Professional Responsibilities Today," P. E. BLACKERBY, Louisville, Ky.

2. "Maternal and Child Health and Crippled Children's Services During the War," EDWIN F. DAILEY, Director, Division of Health Services, Children's Bureau, U. S. Department of Labor, Washington, D. C.

Discussion opened by Edward Davens, Acting Chief, Bureau of Child Hygiene, Maryland Department of Health, Baltimore, Md.; B. F. Austin, State Health Officer, Montgomery, Ala.

3. "The May Act—A New Weapon Against the Venereal Diseases," FRANK E. WILSON, Williamston, N. C. (Major, Medical Corps, U. S. Army.)

4. "Public Health Nursing in Wartime," (Miss) PEARL McIVER, Principal Public Health Nursing Consultant, U. S. Public Health Service, Washington, D. C.

5. "Army Milk Requirements," RAYMOND D. KELSER, Brigadier General, U. S. Army, Director, Veterinary Division, Office of the Surgeon General, Washington D C.

Wednesday, November 11, 12:30 noon

Meeting of Governing Council—Luncheon

P. E. Blackerby, President, presiding

Wednesday, November 11, 2:00 p. m.

Y M C A Auditorium

GENERAL SESSION

P. E. Blackerby, president, presiding

6. "Recent Advances in the Study of Poliomyelitis," DON W. GUDAKUNST, Medical Director, National Foundation for Infantile Paralysis, New York, N. Y.

Discussion opened by W. B. Grayson, State Health Officer, Little Rock, Ark.; C. E. Irwin, Georgia Warm Springs Foundation, Warm Springs, Ga.

7. SYMPOSIUM ON CIVILIAN DISASTER PROTECTION

Discussion of the main services should be included in the plan of each local health service.

(a) Medical—GEORGE BAEHR, U. S. Office of Civilian Defense, Washington, D. C.

(b) Sanitation—(Mr.) GORDON E. McCALLUM, U. S. Office of Civilian Defense, Washington, D. C.

(c) Nursing—(Miss) MARION RANDALL, U. S. Office of Civilian Defense, Washington, D. C.

(d) Volunteer Service.

(e) Summary—GEORGE BAEHR, U. S. Office of Civilian Defense, Washington, D. C.

Discussion on Symposium opened by M. V. Ziegler, Regional Medical Director, Third Civilian Defense Region, Washington, D. C.

Election of Officers.

Tuesday, November 10, 10:00 a. m.

Y M C A Committee Room

PUBLIC HEALTH NURSING SECTION

(Miss) Ella Mae Hott, Jefferson City, Mo., Chairman, presiding

1. "Program Planning," (Miss) LUCILLE SATTERFIELD, Senior Public Health Nursing Consultant, State Department of Public Health, Nashville, Tenn.

2. "The Public Health Nurse in Industry," (Miss) WILLIE BELLE EMERSON, Public Health Nurse, Standard Coosa Thatcher Company, Piedmont, Ala.

3. "Venereal Disease Control in Industry as it Relates to Nursing," (Miss) DONNA PEARCE, Public Health Nursing Consultant, U. S. Public Health Service, Washington, D. C.

Tuesday, November 10, 12:30 noon

Luncheon Session

(Miss) Ella Mae Hott, Jefferson City, Mo., Chairman, presiding

Tuesday, November 10, 10:00 a. m.

Y M C A Auditorium

SANITARY ENGINEERS' AND SANITATION OFFICERS' SECTION

(Mr.) R. E. Dorer, Vice-Chairman, presiding

Appointment of Committees.

1. "Typhus or Rodent Control," C. R. ESKEY, Senior Surgeon, U. S. Public Health Service, Typhus Control Unit, Washington, D. C.

2. "Sanitary Engineering in the Civilian Defense Program," R. E. TARBETT, Sanitary Engineer, Director, U. S. Public Health Service, and Chief Sanitary Engineer, Office of Civilian Defense, Washington, D. C.

3. "Sanitation During the National Emergency," L. M. CLARKSON, Director, Division of Public Health Engineering, Georgia Department of Public Health, Atlanta, Georgia.

4. "The Milk Supply Problem in Military Areas," H. J. DARCEY, Chief Engineer, Director, Bureau of Sanitation, Oklahoma Department of Public Health, Oklahoma City, Oklahoma.

5. "General Sanitation in Zones Around War Areas," (Mr.) J. E. ENDERS, Regional Supervisor Rural Sanitation, Virginia State Department of Health, Richmond, Va.

6. "A Supplementary Study of Pneumoconiosis Among Mica and Pegmatite Workers" (Lantern Slides), J. A. WINSTEAD, PAUL V. JOLIET and T. F. VESTAL, Division of Industrial Hygiene, North Carolina State Board of Health, Raleigh, N. C.

Tuesday, November 10, 2:00 p. m.

Joint Session with the National Malaria Society.
See program on this page.

Wednesday, November 11, 7:00 p. m.

Annual Section Dinner. A short business session preceding election of officers and receive report of committees.

NATIONAL MALARIA SOCIETY

Meeting Conjointly with Southern Medical Association

Headquarters: Jefferson Hotel

Meeting Place: Y M C A Auditorium

Officers

Honorary President—L. O. Howard, Washington, D. C.
President—(Mr.) John H. O'Neill, New Orleans, La.
President-Elect—J. S. Simmons, Washington, D. C.
Vice-President—H. W. Brown, Chapel Hill, N. C.
Secretary-Treasurer—Mark F. Boyd, Tallahassee, Fla.
Hosts from the Richmond Academy of Medicine—J. McCaw Tompkins, J. A. Rollings and Frederick W. Shaw.

Tuesday, November 10, 2:00 p. m.

Y M C A Auditorium

Joint Session of the National Malaria Society and the Sanitary Engineers' and Sanitation Officers' Section, Southern Branch American Public Health Association, (Mr.) John H. O'Neill, President, National Malaria Society, presiding.

1. President's Address: "The War and Our Opportunity for Service," (Mr.) JOHN H. O'NEILL, Chief Engineer, Louisiana State Department of Health, New Orleans, La.

SYMPOSIUM ON MALARIA CONTROL IN WAR AREAS

2. "Malaria Control in War Areas," L. L. WILLIAMS, JR., Medical Director, U. S. Public Health Service, Atlanta, Ga., and (Mr.) MARK D. HOLLIS, Sanitary Engineer, U. S. Public Health Service, Atlanta, Ga.

3. "Entomological Services in the Regulation of the Larvicide Program," (Mr.) GEORGE H. BRADLEY, Senior Entomologist, Bureau of Entomology and Plant Quarantine, New Smyrna Beach, Fla., and (Mr.) HARRY G. HANSON, Passed Assistant Sanitary Engineer (R), U. S. Public Health Service, Atlanta, Ga.

4. "State and Local Organizations for Malaria Control in War Areas" (Lantern Slides), (Mr.) LOUVA G. LENERT, Associate Engineer, Malaria Control, and (Mr.) W. A. LEGWEN, Assistant Engineer, Malaria Control, Georgia State Department of Health, Atlanta, Ga.

5. "Community Education for Malaria Control," TRAWICK H. STUBBS, Assistant Surgeon, U. S. Public Health Service, Atlanta, Ga., and C. MAYHEW DERRYBERRY, Chief, Field Activities in Health Education, U. S. Public Health Service, Bethesda, Md.

Discussion opened by J. L. Roberts, Jr., Sanitary Engineer, U. S. Public Health Service, Memphis, Tenn.

6. "Water Chestnut in Relation to Malaria Control in War Areas," (Mr.) R. E. DORER and (Mr.) J. C. McNAIR, U. S. Marine Hospital, Norfolk, Va.

7. "Antimalaria Ditching by Dynamite" (Lantern Slides), (Mr.) NELSON H. RECTOR, Sanitary Engineer (R), U. S. Public Health Service, Atlanta, Ga.

8. "Progress in the Application of Laboratory Methods in the Army's Malaria Control Program" (Lantern Slides), DWIGHT M. KUHNS, Lieutenant Colonel, Medical Corps, U. S. Army; MARY RAY, Junior Bacteriologist and Parasitologist; and WILLARD V. KING, Lieutenant Colonel, Sanitary Corps, Fourth Service Command Laboratory, U. S. Army, Fort McPherson, Ga.

9. "Development of Entomological Service of the Fourth Service Command Laboratory as Applied to the Army's Mosquito-Control Program," WILLARD V. KING, Lieutenant Colonel, Sanitary Corps, U. S. Army; and DWIGHT M. KUHNS, Lieutenant Colonel, Medical Corps, U. S. Army, Fourth Service Command Laboratory, Fort McPherson, Ga.

10. "Methods Used for Investigating Certain Hydrologic Problems Related to Malaria" (Lantern Slides), (Mr.) MELVIN H. GOODWIN, JR., Biologist, Emory University Field Station, Newton, Ga.

Brief Business Session to consider: (a) Report of the Secretary-Treasurer, and (b) the election of officers.

Thursday, November 12, 2:00 p. m.

Y M C A Auditorium

Joint Session of the National Malaria Society and the American Society of Tropical Medicine, (Mr.) John H. O'Neill, President, National Malaria Society, and Ernest Carroll Faust, President, American Society of Tropical Medicine, presiding.

11. "A Review of Malaria Morbidity and Malaria Mortality in the United States During 1941," ERNEST CARROLL FAUST, Professor of Parasitology, Tulane University School of Medicine, New Orleans, La.

12. "Studies of the Mode of Action in Quinine in Avian Malaria" (Lantern Slides), EMANUEL WALETZKY and H. W. BROWN, School of Public Health, University of North Carolina, Chapel Hill, N. C.

Discussion opened by L. T. Coggeshall, School of Public Health, University of Michigan Medical School, Ann Arbor, Mich.

13. "Variations in the Asexual Cycle of Plasmodium When Transferred to Abnormal Host" (Lantern Slides), (Mr.) W. B. REDMOND, Assistant Professor of Biology, and (Mr.) R. M. PRATHER, JR., Emory University, Atlanta, Ga.

14. "Emergent Vegetation, Mechanical Properties of the Water Surface, and Distribution of *Anopheles* larvae" (Lantern Slides), (Mr.) CHARLES E. RENN, Instructor in Sanitary Biology, Graduate School of Engineering, Harvard University, Cambridge, Mass.

15. (1) "A Method for Catching, Making and Re-examining Large Numbers of *Anopheles quadrimaculatus*, Say" (Lantern Slides), and (2) "The Measurement of a Population of *Anopheles quadrimaculatus*, Say" (Lantern Slides), (Mr.) DON E. EYLES, Associate Biologist, Office of Malaria Investigation, U. S. Public Health Service, Memphis, Tenn.

Discussion opened by (Mr.) J. L. Robertson, Jr., Sanitary Engineer, U. S. Public Health Service, Memphis, Tenn.

16. (1) "Transit-Plane Table Topographic Mapping Used on Malaria Control Drainage" (Lantern Slides), and (2) "Malaria Control Experience with Circular Joint Ditch Paving Slabs and Automatic Siphons" (Lantern Slides), (Mr.) W. A. LEGWEN, Assistant Engineer, Malaria Control, State Department of Public Health, Atlanta, Ga.

AMERICAN SOCIETY OF TROPICAL MEDICINE

Meeting Conjointly with Southern Medical Association

Headquarters and Meeting Place: Jefferson Hotel

Officers

President—Ernest Carroll Faust, New Orleans, La.
President-Elect—N. Paul Hudson, Columbus, O.
Vice-President—Joseph S. D'Antoni, New Orleans, La.
Secretary-Treasurer (ad interim)—Joseph S. D'Antoni, New Orleans, La.
Editor—Charles F. Craig, San Antonio, Tex.
Councilors—Mark F. Boyd, Tallahassee, Fla.; Alfred C. Reed, San Francisco, Calif.; Rolla E. Dyer, Washington, D. C.; J. S. Simmons, Washington, D. C.; L. T. Coggeshall, Ann Arbor, Mich.; Jean A. Curran, Brooklyn, N. Y.; T. J. LeBlanc, Cincinnati, O.; and A. J. Warren, New York, N. Y.
Hosts from the Richmond Academy of Medicine—W. A. Plecker and Pauline Williams.

Monday, November 9, 6:00 p. m.

Jefferson Hotel, Room A

Annual Dinner and Business Meeting of the Officers and Councilors of the Society

Tuesday, November 10, 10:00-12:00 noon

Register at Southern Medical Association's Registration Headquarters, Hotel John Marshall, Lobby Floor

Tuesday, November 10, 2:00 p. m.

Jefferson Hotel, Colonial Room

1. "A Unitarian Looks at Treponematosis" (Lantern Slides) (12 min.), E. H. HUDSON, Lieutenant Commander, (MC) USNR, Department of Tropical Medicine and Parasitology, Naval Medical School, National Naval Medical Center, Bethesda, Md.

2. "Differential Diagnosis between Epidemic Jaundice, Weil's Disease and Yellow Fever" (Lantern Slides and Motion Pictures) (15 min.), A. PACKCHANIAN, University of Texas School of Medicine, Galveston, Tex.

3. The Seventh Charles Franklin Craig Lecture on Tropical Medicine.

4. "Tapa Culo Disease" (10 min.), AGUILAR MEZA RICARDO, Tiquisate Hospital, Tiquisate, Gautemala.

5. "Twenty-Four Years in a Bush Hospital, Belgian Congo, Central Africa: Cross Section of Tropical Practice" (Lantern Slides) (15 min.), EUGENE ROLAND KELLERSBERGER, American Mission to Lepers, New York, New York.

6. "Multiple Deficiency Disease Secondary to Allergy and Nutritional Enteritis: A Case Study" (Read by title), ALFRED C. REED, Stanford University Medical School, San Francisco, Calif.

7. "Clinical Observations on Spotted Fever in the Gulf Coast Area of Texas" (12 min.), BOYD READING, University of Texas School of Medicine, Galveston, Tex. (Introduced by Joseph S. D'Antoni.)

8. "Experimental and Epidemiological Studies on Spotted Fever of the Gulf Coast of Texas" (Lantern Slides) (12 min.), LUDWIK ANIGSTEIN and MADERO N. BADER, University of Texas School of Medicine, Galveston, Tex.

Tuesday, November 10, 4:30-6:30 p. m.

Hospitality Group Meeting, Jefferson Hotel, Jefferson Room

Tuesday, November 10, 8:00 p. m.

General Session (President's Night) of the Southern Medical Association, Hotel John Marshall, Roof Garden

Wednesday, November 11, 9:00 a. m.

Jefferson Hotel, Colonial Room

9. "The Incidence of Amebiasis in a Chicago Hospital Over a Twelve-Year Period" (Lantern Slides) (10 min.), MARION HOOD, Louisiana State University School of Medicine, New Orleans, La.

10. "Further Observations on Amebic Colitis in the New Orleans Area" (Lantern Slides) (12 min.), JOSEPH S. D'ANTONI, Tulane University School of Medicine, New Orleans, La.

11. "Preliminary Observations on the Effect of Sewage Treatment Processes on the Ova and Cysts of Intestinal Parasites" (Lantern Slides) (10 min.), WILLARD H. WRIGHT, ELOISE B. CRAM and M. O. NOLAN, Division of Zoology, National Institute of Health, U. S. Public Health Service, Bethesda, Md.

12. "The Effect of Water Chlorination on the Viability of the Cysts of *Endamoeba histolytica*" (Lantern Slides) (12 min.), FREDERICK J. BRADY, MYRNA F. JONES and WALTER L. NEWTON, Division of Zoology, National Institute of Health, U. S. Public Health Service, Bethesda, Md.

13. "A Preliminary Note on the Complement Fixation Test for Amoebiasis with Antigens Prepared from *Endamoeba histolytica* Grown with a Single Species of Bacteria" (Lantern Slides) (12 min.). CHARLES W. REES, JOHN BOZICEVICH, LUCY V. REARDON and FRANCES JONES, Division of Zoology, National Institute of Health, U. S. Public Health Service, Bethesda, Md.

SYMPOSIUM ON TROPICAL MEDICINE IN THE MEDICAL SCHOOL CURRICULUM

Henry E. Meleney, New York, N. Y., presiding

14. "The Military Need," PAUL F. RUSSELL, Lieutenant Colonel, Medical Corps, U. S. Army, Washington, D. C.

15. "The Civilian Need," MAXWELL E. LAPHAM, Lieutenant Commander, USNR; Assigned to the Procurement and Assignment Service for Physicians, Dentists and Veterinarians, War Manpower Commission, Washington, D. C., and Dean-on-Leave, Tulane University School of Medicine, New Orleans, La.

16. "Finding a Place in the Medical Curriculum," JEAN A. CURRAN, President and Dean, Long Island College of Medicine, Brooklyn, N. Y.

17. "Recent Progress," HENRY E. MELENEY, Professor of Preventive Medicine, New York University College of Medicine, New York, N. Y.

Wednesday, November 11, 12:00 noon

Jefferson Hotel, Flemish Room

Annual Luncheon of the Society

18. President's Address: "Horizons of American Tropical Medicine," ERNEST CARROLL FAUST, New Orleans, La.

Wednesday, November 11, 4:00-6:00 p. m.

Hospitality Group Meeting, Jefferson Hotel, Jefferson Room

Wednesday, November 11, 7:00 p. m.

Jefferson Hotel, Flemish Room

Ninth Annual Dinner of the American Academy of Tropical Medicine

19. President's Address: "Some Impressions of Medical Practice in the Tropics," HERBERT C. CLARK, Panama, R. de P.

Thursday, November 12, 9:00 a. m.

Jefferson Hotel, Colonial Room

20. "Coccidioidomycosis in Wild Rodents: A Possible Reservoir" (Lantern Slides) (12 min.), C. W. EMMONS and L. L. ASHBURN, National Institute of Health, U. S. Public Health Service, Bethesda, Md.

21. "The Longevity and Sex Ratio of *Trichinella spiralis*" (Lantern Slides) (10 min.), IRVING RAPPAPORT, Cornell University Medical College, New York, N. Y.

22. "Clinical Use of Flea Antigen in Patients Hypersensitive to Flea Bites" (Read by title), BARBARA C. McIVOR and L. S. CHERNEY, Stanford University Medical School, San Francisco, Calif. (Introduced by Alfred C. Reed.)

23. Presentation of the Walter Reed Medal of the Society to the Brazilian Government and to Dr. Carlos E. Finlay (posthumously), Havana, Cuba.

24. "Pinworm Infections Among Patients of an Indiana Hospital for Children" (Lantern Slides) (5 min.), WILLIAM HUGH HEADLEE, Department of Biology, Purdue University, Lafayette, Ind.

25. "Studies on the Effectiveness of Phenothiazine in Human Nematode Infections" (Lantern Slides) (10 min.), HARRY MOST, New York University College of Medicine, New York, N. Y.

26. Round Table: "Malaria Therapy During the Present Emergency."

Brief Business Session.

Thursday, November 12, 2:00 p. m.

Joint Session with the National Malaria Society. See National Malaria Society, page 1040, for program.

AMERICAN ACADEMY OF TROPICAL MEDICINE

Meeting Conjointly with American Society of Tropical Medicine

Officers

President—Herbert C. Clark, Panama, R. de P.
Vice-President—Lewis W. Hackett, Buenos Aires, Argentina
Secretary—Ernest Carroll Faust, New Orleans, La.
Treasurer—Thomas T. Mackie, Washington, D. C.

Wednesday, November 11, 7:00 p. m.

Jefferson Hotel, Flemish Room

Ninth Annual Dinner of the American Academy of Tropical Medicine, RICHARD P. STRONG, Professor Emeritus of Tropical Medicine, Harvard Medical School, Boston, Mass., now of Washington, D. C., Toastmaster. Presidential Address by HERBERT C. CLARK, Director, Gorgas Memorial Laboratory, Panama, R. de P., entitled, "Some Impressions of Medical Practice in the Tropics."

AMERICAN ACADEMY OF PEDIATRICS
Region 2

Meeting Conjointly with Southern Medical Association

Headquarters and Meeting Place: Richmond Hotel

Officers

Chairman—Hugh Leslie Moore, Dallas, Tex.
Vice-Chairman—Warren W. Quillian, Coral Gables, Fla.
Local Chairman—J. B. Stone, Richmond, Va.
Hosts from the Richmond Academy of Medicine—Lee E. Sutton, Jr., Howard Urbach and Henry Stern.

Tuesday, November 10, 2:00 p. m.

Richmond Hotel, Ballroom

J. B. Stone, Richmond, presiding

1. "The Psychology of Acne," THOMAS W. MURRELL, Professor of Dermatology and Syphilology, Medical College of Virginia, Richmond, Va.

2. "Flat Feet in Children" (Lantern Slides), H. PAGE MAUCK, Professor of Clinical Orthopedic Surgery, Medical College of Virginia, Richmond, Va.

3. "Deformities of the Genito-Urinary Tract" (Lantern Slides), AUSTIN I. DODSON, Professor of Urology, Medical College of Virginia, Richmond, Va.

4. "Applied Hematology in the Practice of Pediatrics," J. HAMILTON SCHERER, Assistant Professor of Medicine, Medical College of Virginia, Richmond, Va.

5. "Brain Tumors in Children: Roentgen Diagnosis and Therapy" (Lantern Slides), FREDK. B. MANDEVILLE, Professor of Radiology, Medical College of Virginia, Richmond, Va.

6. "Acute Respiratory Obstruction in Infants and Children," LEE E. SUTTON, JR., Professor of Pediatrics, Medical College of Virginia, Richmond, Va.

Wednesday, November 11, 12:30 noon

Richmond Hotel, Ballroom

Joint Luncheon, American Academy of Pediatrics, Region 2, and Section on Pediatrics, Southern Medical Association

Wednesday, November 11, 2:00 p. m.

Richmond Hotel, Ballroom

Lee E. Sutton, Jr., Richmond, presiding

7. "The Incidence of Rickets and Scurvy" (Lantern Slides), EDWARDS A. PARK, Professor of Pediatrics, Johns Hopkins University School of Medicine, Baltimore, Md.; MARTHA ELLIOTT, Associate Chief, Children's Bureau, U. S. Department of Labor, Washington, D. C.; RICHARD FOLLIS, JR., Associate Professor of Pathology, Johns Hopkins University School of Medicine, Baltimore, Md.; and (Miss) DEBORAH JACKSON, Baltimore, Md.

8. "The Essential Needs of Children During War and Peace," HORTON CASPARIS, Professor of Pediatrics, Vanderbilt University School of Medicine, Nashville, Tenn.

9. "The Use of Cereal Thickened Formulas Instead of Liquid Milk Formulas to Preserve Maternal Nursing," CHESTER A. STEWART, Professor of Pediatrics, Louisiana State University School of Medicine, New Orleans, La.

10. "The Use of the Sulfonamides in the Treatment of Diarrheas" (Lantern Slides), C. M. BURPEE, Professor of Pediatrics, University of Georgia School of Medicine, Augusta, Ga.

11. "Bronchoscopy in the Newborn," W. W. WADDELL, Associate Professor of Pediatrics, University of Virginia School of Medicine, and FLETCHER D. WOODWARD, Professor of Otolaryngology, University of Virginia School of Medicine, Charlottesville, Va.

Wednesday, November 11, 7:30 p. m.

Richmond Hotel, Ballroom

Joint Dinner, American Academy of Pediatrics, Region 2, and Section on Pediatrics, Southern Medical Association.

WOMAN'S AUXILIARY TO THE SOUTHERN MEDICAL ASSOCIATION

NINETEENTH ANNUAL MEETING

Headquarters and Meeting Place: Jefferson Hotel

Officers

President—Mrs. J. Ullman Reaves, Mobile, Ala.
President-Elect—Mrs. Richard H. Clark, Hattiesburg, Miss.
First Vice-President—Mrs. John Pierpont Helmick, Fairmont, West Virginia.
Second Vice-President—Mrs. Martin J. Glaser, St. Louis, Mo.
Recording Secretary—Mrs. L. S. Thompson, Dallas, Tex.
Corresponding Secretary—Mrs. L. W. Roe, Mobile, Ala.
Treasurer—Mrs. Olin S. Cofer, Atlanta, Ga.
Historian—Mrs. Joseph E. Weir, Louisville, Ky.
Parliamentarian—Mrs. W. W. Potter, Knoxville, Tenn.

Standing Committees—
Custodian of Records—Miss Grace Stroud, Louisville, Ky.
Research—Mrs. Harvey F. Garrison, Jackson, Miss.
Resolutions—Mrs. C. F. Strosnider, Goldsboro, N. C.
Jane Todd Crawford—Mrs. Luther Bach, Bellevue, Ky.
Budget—Mrs. August A. Werner, St. Louis, Mo.
Memorial—Mrs. H. Leslie Moore, Dallas, Tex.

Tuesday, November 10

Registration will begin at 9:00 a. m. at the Jefferson Hotel, Franklin Street Entrance, and at Hotel John Marshall.

Wednesday, November 11, 8:00 a. m.

Executive Board Meeting and Breakfast, Woman's Auxiliary to the Southern Medical Association, Jefferson Hotel, Flemish Room, Mrs. J. Ullman Reaves, President, presiding.

Wednesday, November 11, 10:00 a. m.

Jefferson Hotel, Auditorium

Mrs. J. Ullman Reaves, President, presiding

All women attending the Southern Medical Association are cordially invited to attend.

Call to order by the President.

Invocation—Rev. Thomas E. O'Connell, St. Paul's Catholic Church, Richmond.

Assembly Singing, "America"—Mrs. L. Benjamin Sheppard, leader, Richmond, and Mrs. Ruth Davis, accompanist, Richmond.

Pledge to the Flag—Led by Mrs. W. W. Potter, Parliamentarian, Woman's Auxiliary to the Southern Medical Association, Knoxville, Tenn.

Addresses of Welcome—
Mrs. James K. Hall, General Chairman, Richmond.
Mrs. Percy E. Schools, President, Woman's Auxiliary to the Richmond Academy of Medicine, Richmond.
Mrs. H. W. Rogers, President, Woman's Auxiliary to the Medical Society of Virginia, Norfolk.

Response to the Addresses of Welcome—Mrs. John Pierpont Helmick, First Vice-President, Woman's Auxiliary to the Southern Medical Association, Fairmont, W. Va.

Greetings from the Advisory Committee of the Southern Medical Association—Dr. M. Pinson Neal, President, Columbia, Mo.; Dr. R. J. Wilkinson, Chairman of Council, Huntington, W. Va.; and Mr. C. P. Loranz, Secretary-Manager, Birmingham, Ala.

Annual Report of Officers—
President-Elect—Mrs. Richard H. Clark.
First Vice-President—Mrs. John Pierpont Helmick.
Second Vice-President—Mrs. Martin J. Glaser.
Recording Secretary—Mrs. L. S. Thompson.
Corresponding Secretary—Mrs. L. W. Roe.
Treasurer—Mrs. Olin S. Cofer.
Parliamentarian—Mrs. W. W. Potter.
President—Mrs. J. Ullman Reaves.

Address: Mrs. Frank N. Haggard, President, Woman's Auxiliary to the American Medical Association, San Antonio, Tex.

Report of Registration Committee—Mrs. Austin I. Dodson, Chairman, Richmond.

Resolutions—Mrs. C. F. Strosnider, Goldsboro, N. C.

Count of States.

In Memoriam Service—Mrs. E. Latane Flanagan, Richmond.

Solo—Mrs. L. Benjamin Sheppard, Richmond, accompanied by Mrs. Ruth Davis, Richmond.

Adjournment.

Wednesday, November 11, 1:00 p. m.

Jefferson Hotel

Annual Luncheon of the Auxiliary. All women attending the Southern Medical Association meeting are cordially invited to attend. Luncheon tickets, $1.50.

Mrs. J. Ullman Reaves, President, presiding

Invocation—Mrs. Southgate Leigh, Past President, Woman's Auxiliary to the Southern Medical Association, Norfolk, Va.

Pledge to the Flag—Led by Mrs. J. Asa Shield, Richmond.

Assembly Singing, National Anthem—Mrs. L. Benjamin Sheppard, leader, Richmond, and Mrs. Ruth Davis, accompanist, Richmond.

Presentation of Distinguished Guests.

Recognition of Past Presidents of the Woman's Auxiliary to the Southern Medical Association.

Introduction of General Chairman, Mrs. James K. Hall, Richmond.

Address: "The American Standard of Health," W. W. BAUER, M.D., Director, Bureau of Health Education, American Medical Association, Chicago, Ill.

Radio Broadcast, Mrs. Joseph E. Weir, Louisville, Ky.

Music—Mrs. W. L. Cosby (violinist), Painter, Va., accompanied by Mrs. Ruth Davis, Richmond.

Announcements by General Chairman.

Adjournment.

Thursday, November 12, 9:30 a. m.

Jefferson Hotel, Auditorium

Mrs. J. Ullman Reaves, President, presiding

All women attending the Southern Medical Association meeting are cordially invited to attend.

Call to order by the President.

Assembly Singing, "God Bless America"—Mrs. L. Benjamin Sheppard, leader, Richmond, and Mrs. Ruth Davis, accompanist, Richmond.

Pledge to the Flag—Led by Mrs. Martin J. Glaser, Second Vice-President, Woman's Auxiliary to the Southern Medical Association, St. Louis, Mo.

Reading of Minutes—Mrs. L. S. Thompson, Recording Secretary, Dallas, Tex.

Report of Registration Committee—Mrs. Austin I. Dodson, Chairman, Richmond.

Reports of Standing Committees—
Budget—Mrs. August A. Werner, St. Louis, Mo.
Custodian of Records—Miss Grace Stroud, Louisville, Ky.
Jane Todd Crawford—Mrs. Luther Bach, Bellevue, Ky.
Research—Mrs. Harvey F. Garrison, Jackson, Miss.

Report from State Councilors.

Old Business.

New Business.

Report of Nominating Committee.

Election of Officers.

Installation of Officers—Mrs. Charles P. Corn, Past President, Woman's Auxiliary to the Southern Medical Association, Greenville, S. C.

Courtesy Resolutions—Mrs. C. F. Strosnider, Chairman, Goldsboro, N. C.

Assembly Singing, "Blest Be the Tie That Binds."

Adjournment.

COUNCIL, Woman's Auxiliary to the Southern Medical Association
(All are Members of the Executive Board)

Expire 1942—
Oklahoma—Mrs. G. H. Garrison, Oklahoma City.
South Carolina—Mrs. C. C. Ariail, Greenville.
Tennessee—Mrs. H. E. Christenberry, Knoxville.
Texas—Mrs. Frank N. Haggard, San Antonio.
Virginia—Mrs. Hawes Campbell, Venter.
West Virginia—Mrs. R. H. Walker, Charleston.

Expire 1943—
Alabama—Mrs. E. H. Hargis, Birmingham.
Arkansas—Mrs. W. R. Brooksher, Fort Smith.
District of Columbia—Mrs. Oscar B. Hunter, Washington.
Florida—Mrs. John A. Beuls, Jacksonville.
Georgia—Mrs. O. S. Cofer, Atlanta.

Expire 1944—
Kentucky—Mrs. Philip E. Blackerby, Louisville.
Louisiana—Mrs. A. D. Tisdale, Monroe.
Maryland—
Mississippi—Mrs. E. C. Parker, Gulfport.
Missouri—Mrs. Harry M. Gilkey, Kansas City.
North Carolina—Mrs. Clyde R. Hedrick, Lenoir.

PAST PRESIDENTS, Woman's Auxiliary to the Southern Medical Association
(All are Members of the Executive Board)

1925, Mrs. E. H. Cary, Dallas, Tex.
1926, Mrs. D. J. Williams, Gulfport, Miss.
1927, Mrs. Oscar M. Marchman, Dallas, Tex.
1928, Mrs. Arthur T. McCormack, Louisville, Ky.
1929, Mrs. C. W. Garrison, Little Rock, Ark.
1930, Mrs. James N. Brawner, Atlanta, Ga.
1931, Mrs. S. A. Collom, Sr., Texarkana, Tex.
1932, Mrs. Charles E. Oates, North Little Rock, Ark.
1933, Mrs. Arthur A. Herold, Shreveport, La.
1934, Mrs. Southgate Leigh, Norfolk, Va.
1935, Mrs. J. Bonar White, Atlanta, Ga.
1936, Mrs. Oliver W. Hill, Knoxville, Tenn.
1937, Mrs. Frank N. Haggard, San Antonio, Tex.
1938, Mrs. Luther Bach, Bellevue, Ky.
1939, Mrs. W. K. West, Oklahoma City, Okla.
1940, Mrs. Charles P. Corn, Greenville, S. C.
1941, Mrs. M. Pinson Neal, Columbia, Mo.

COMMITTEES ON WOMEN'S ENTERTAINMENT, RICHMOND

General Chairman—Mrs. James K. Hall.

Hostess—Mrs. Wyndham B. Blanton.

Registration—Mrs. Austin I. Dodson and Mrs. Douglas G. Chapman.

Luncheon at Jefferson Hotel—Mrs. J. Asa Shield and Mrs. James T. Tucker.

Program—Mrs. Lee E. Sutton, Jr.

Governor's Mansion Tea—Mrs. Thomas W. Murrell.

Tea at Richmond Academy of Medicine—Mrs. Percy E. Schools.

Tours—Mrs. John Powell Williams.

Official Hostesses (wives of physicians who hold or who have held positions in the Southern Medical Association; who are chairmen of the committees on arrangements; who are chairmen of sections; and who are the officers of the Richmond Academy of Medicine)—Mrs. Wyndham B. Blanton, Chairman; Mrs. Stuart McGuire, Mrs. J. Shelton Horsley, Mrs. Chas. R. Robins, Mrs. Douglas VanderHoof, Mrs. W. Lowndes Peple, Mrs. I. C. Riggin, Mrs. Beverley R. Tucker, Mrs. Fred M. Hodges, Mrs. Thomas W. Murrell, Mrs. William T. Sanger, Mrs. William H. Higgins, Mrs. I. A. Bigger, Mrs. T. Dewey Davis, Mrs. Chas. M. Caravati, Mrs. Fred P. Fletcher, Mrs. Lee E. Sutton, Jr., Mrs. Harvey B. Haag, Mrs. Chas. L. Outland, Mrs. James H. Smith, Mrs. Austin I. Dodson, Mrs. W. Ambrose McGee, Mrs. Warren T. Vaughan, Mrs. Paul W. Howle, Mrs. Stuart N. Michaux, Mrs. Arthur S. Brinkley, Mrs. Emmett H. Terrell, Mrs. John P. Lynch, Mrs. B. W. Rawles, Jr., Mrs. William B. Porter, Mrs. Porter P. Vinson, Mrs. J. B. Stone, Mrs. L. J. Whitehead, Mrs. E. Latane Flanagan, Mrs. Percy E. Schools, all of Richmond, and Mrs. Southgate Leigh and Mrs. H. W. Rogers, Norfolk, and Mrs. Hawes Campbell, Venter.

OFFICERS, WOMAN'S AUXILIARY TO THE RICHMOND ACADEMY OF MEDICINE

President—Mrs. Percy E. Schools.
Vice-President—Mrs. L. H. Apperson.
Recording Secretary—Mrs. O. Bruton Darden.
Corresponding Secretary—Mrs. Harry Hinchman.
Treasurer—Mrs. Douglas G. Chapman.
Historian—Mrs. Ramon Garcin.
Parliamentarian—Mrs. Charles E. Llewellyn.

OFFICERS, WOMAN'S AUXILIARY TO THE MEDICAL SOCIETY OF VIRGINA

President—Mrs. H. W. Rogers, Norfolk.
President-Elect—Mrs. W. Clyde West, Alexandria.
Vice-Presidents—Mrs. Louis Kolipinski, Petersburg; Mrs. Joseph L. DeCormis, Accomac; Mrs. Wright Clarkson, Petersburg; and Mrs. Henry L. Townsend, Marshall.
Recording Secretary—Mrs. C. C. Smith, Norfolk.
Corresponding Secretary—Mrs. A. G. Horton, Norfolk.
Treasurer—Mrs. Reuben F. Simms, Richmond.
Parliamentarian—Mrs. Fletcher J. Wright, Petersburg.
Press and Publicity—Mrs. C. E. Arnette, Alexandria.

TECHNICAL EXHIBITS

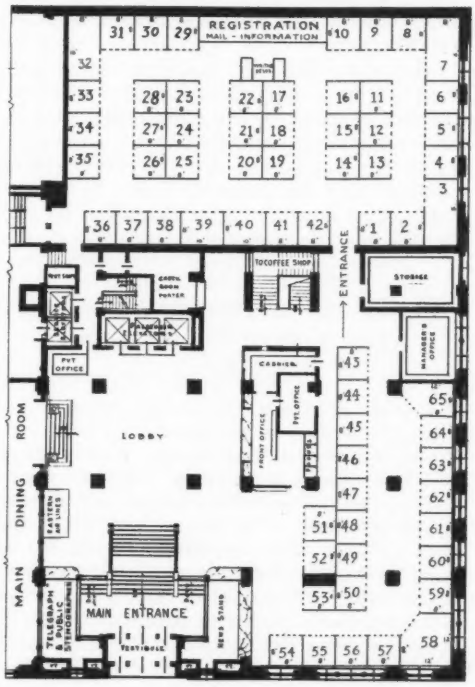
Hotel John Marshall

The Technical Exhibits, always a feature of the annual meeting, will be up to the usual high standard for the Richmond meeting. There will be uniform booths and the whole layout will be found very attractive The Technical Exhibits are very definitely a scientific and educational part of the annual meeting, where much can be learned. The physicians will find the exhibitors courteous and anxious to answer any questions that may be asked, no physician being solicited to purchase any item.

Here follow the names of the firms who have reserved space and their space number:

	Space No.
Aloe Company, A. S., St. Louis, Mo.	20-22
American Optical Company, Southbridge, Mass.	58
Armour Laboratories, The, Chicago, Ill.	49
Bard-Parker Company, Inc., Danbury, Conn.	24
Bilhuber-Knoll Corporation, Orange, N. J.	25
Camp & Company, S. H., Jackson, Mich.	55
Carnation Company, Oconomowoc, Wis.	64
Ciba Pharmaceutical Products, Inc., Summit, N. J.	10
Davis & Geck, Inc., Brooklyn, N. Y.	62
Doak Company, The, Cleveland, O.	60

Doho Chemical Corporation, The, New York, N. Y. 65
Eastman Kodak Company, Rochester, N. Y. 41
Effervescent Products, Inc., Elkhart, Ind. 12
Fairchild Brothers and Foster, New York, N. Y. 63



General Electric X-Ray Corporation, Chicago, Ill. 6-7
Gilliland Laboratories, Marietta, Pa. 59
Hoffman-LaRoche, Inc., Nutley, N. J. 33-35
Horlick's Malted Milk Corporation, Racine, Wis. 9
Hynson, Westcott & Dunning, Inc., Baltimore, Md. 1-2
Johnson and Johnson, New Brunswick, N. J. 26
LaMotte Chemical Products Company, Baltimore, Md. 56
Lea & Febiger, Philadelphia, Pa. 61
Lilly and Company, Eli. Indianapolis, Ind. 14-16
Lippincott Company, J. B., Philadelphia, Pa. 43
M & R Dietetic Laboratories, Inc., Columbus, O. 42
Majors Company, J. A., New Orleans, La. 52
Mead Johnson & Company, Evansville, Ind. 3
Medical Bureau, The, Chicago, Ill. 29
Merck & Company, Inc., Rahway, N. J. 8
Merrell Company, The William S., Cincinnati, O. 54
Mosby Company, C. V., St. Louis, Mo. 17
Parke, Davis & Company, Detroit, Mich. 11
Petrogalar Laboratories, Inc. 47-48
Picker X-Ray Corporation, New York, N. Y. 31-32
Powers and Anderson, Richmond, Va. 4
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Southern Medical Journal

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SOUTHERN MEDICAL ASSOCIATION

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M. Y. DABNEY, M.D., Editor
C. P. LORANZ, Secretary, Treasurer and General Manager

Volume 35 NOVEMBER 1942 Number 11

EDITORIAL DEPARTMENT

SOUTHERN MEDICAL ASSOCIATION
Thirty-Sixth Annual Meeting
Richmond, Virginia, November 10-12, 1942

RICHMOND MEETING

The complete program of the thirty-sixth annual meeting of the Association will be found beginning on page 1027. Casual perusal will show that the war has put a strong imprint upon it, and its tempo has been speeded to meet current needs. The time is cut to three days, Tuesday, Wednesday and Thursday, November tenth to twelfth. Most section meetings and many exhibits contain material which is of military importance, in addition to the usual discussion of progress in medicine and surgery. Men in the Army, Navy, and Public Health Service will present work in all the specialties. Among subjects noted on the program and among exhibits are: work on dietary deficiency diseases, food in war, and Army emergency rations, presentations from the Army Medical Museum, the British Information Services, Office of Civilian Defense, Ministry of Education and Health of Brazil, a display on medical service for forty thousand war workers, on civilian medical care in total war, venereal disease control in industry, aviation medicine, and information regarding problems of physicians entering military service.

Hobby exhibits will appear as they have in the past few years. Social events and the golf tournament will not be eliminated. Entertainment for women guests will be held close to headquarters hotels. The various groups of the Association will gather in places convenient to downtown hotels, so that there will be no transportation difficulties.

Every effort has been made to supply work which will help physicians, military and civil, with the problems of the coming year. Meetings for the physician have always been to some degree recreational, and some diversion will be combined with the necessary study.

Richmond is ready for a useful and instructive wartime meeting.

RELIEF OF SYMPTOMS OF BLACK TONGUE WITHOUT NICOTINIC ACID

Nicotinic acid cures black tongue in dogs and pellagra in human beings and has made of even severe pellagra an ambulatory disease which may be treated for the most part in an outpatient clinic. Nicotinic acid has been demonstrated chemically to be an essential part of the oxygen exchange, or respiratory mechanism of living tissues. Oxidation is such a vital activity of the living cell that black tongue death has been assumed to be due to failure of oxidation, or smothering of the cells. Handler and Dann,[1] of Duke University, have studied the reactions of dogs *in extremis* from black tongue, and conclude that tissue respiration is not the essential failure in this disease. They note that tissues of black tongue dogs can oxidize glucose as rapidly as tissues of normals. The question is, then, what actually causes death in black tongue and pellagra?

The Duke investigators undertook careful observations of black tongue dogs, in the attempt to determine the cause of their final exitus. Black tongue developed in their dogs on a nicotinic acid deficient diet in two months and was acute the following two weeks. Just before the appearance of acute symptoms, the animals lost 20 to 30 per cent of their original body weight in about five days; they were reduced by almost one-third. This, the investigators say, could be due only to fluid loss. Nothing else in the body would be sufficiently mobile. It is of

1. Handler, Philip; and Dann, W. J.: Biochemical Defect in Nicotinic Acid Deficiency. J. Biol. Chem., **145**:145 (Sept.) 1942.

interest, however, that fat in simple obesity is lost in the same rather sudden way. Protein also could be lost as a sudden conversion of much of it to water. The experimental animals then became anuric and would not eat or drink. Fluid loss was frequently aggravated by severe bloody diarrhea. Dehydration and electrolyte imbalance, it was thought, might be of critical importance in causing their death.

In the attempt to induce recovery without administering the missing vitamin, the dogs were given normal saline to the extent of almost ten per cent of their body weight per day. In more than half of the 57 dogs, dramatic disappearance of symptoms of black tongue occurred in two weeks, without any nicotinic acid treatment. The typical red of the mouths disappeared. The dogs started eating and drinking again, saline therapy was stopped and they went on to apparent recovery. A few were benefited by treatment with sodium chloride by mouth.

The treated animals survived an average of two and a half months, a few of them lasting six months. Twelve died with no signs of black tongue, though they were weak and unable to stand. At autopsy, even the dogs which had been maintained alive for four months after relief of the symptoms of acute black tongue showed no striking changes except the disappearance of almost all depot fat. The authors suggest that there is a resemblance between the crises of adrenal deficiency and black tongue in dogs.

They conclude that parenteral administration of normal saline to dogs with acute black tongue resulted in alleviation of the deficiency syndrome and prolongation of their lives sometimes as much as six months. Though all the animals eventually succumbed to the deficiency disease, their symptoms when dying seldom resembled the classical picture of black tongue. Further pathologic studies are to be made of the animals. The treatment has a possible use in war emergencies, when nicotinic acid might not be available.

It is most interesting that an acute deficiency state was relieved for a considerable period in a large number of animals without supplying the necessary food factor, merely by assisting nature to restore a defective fluid exchange. This might be called treating a symptom. It is interesting that body fat was lost like fluid during late stages of nicotinic acid deficiency, and that weight could be restored and acute symptoms relieved for a considerable time by supplying water and sodium chloride.

The results are comparable in a way with McCollum's treatment of scurvy twenty-five years ago. Scorbutic guinea pigs appeared to be cured of their scurvy when an impacted lower intestinal tract was cleared of feces. McCollum concluded that the entire defect of the diet was mechanical; that no additional vitamin was necessary for the pigs, but roughage was required to sweep the colon clean. Although he soon gave up this thesis, his work influenced a generation of clinical medicine and popularized the supposedly indigestible fibrous foods for human constipation. In his scorbutic guinea pigs life was prolonged by treatment of a symptom, though the underlying deficiency was not corrected.

The temporary relief of nicotinic acid deficiency in more than half a large group of dogs by injection of large quantities of normal saline illustrates the close relationship between mineral balance and metabolism of other more complex food elements. Studies upon fluid and salt loss are valuable in many conditions. The body responds exceedingly rapidly to their restoration.

EFFECTS OF SULFANILAMIDE, SULFATHIAZOLE AND SULFADIAZINE

Various undesirable sequelae of treatment with the sulfonamide drugs have been noted. The more recent products on the market seem to have fewer toxic qualities, though reactions to all of them have been reported. Investigators[1] at Harvard have compared the effects of sulfanilamide, sulfathiazole and sulfadiazine upon healthy ambulant laboratory workers, at rest and after strenuous exercise. They compared also the effects upon mental activity.

Sulfanilamide, they say, when given to ambulatory workers reduces the capacity for exacting mental work and heavy manual labor. It interferes with the normal rate of removal of carbon dioxide from the blood and produces thus a degree of acidosis. Sulfathiazole and sulfadiazine have not this effect in the blood. After exercise on a treadmill and on a bicycle, subjects which had taken sulfanilamide showed definite impairment. Upon being given the Johnson code test for mental performance,

1. Roughton, F. J.; Darling, R. C.; Forbes, W. H.; Horvath, S. M.; Robinson, Sid; and Talbott, J. H.: Effects of Sulfathiazole and Sulfadiazine on Man at Rest and During Exercise. Am. J. Physiol., **137**:593 (Oct.) 1942.

again there was considerable retardation among sulfanilamide treated subjects. These effects were not shown by the same men after they had taken sulfathiazole or sulfadiazine. Mental and physical activity and coordination were little if at all impaired when these drugs were administered up to 4 grams per day, and there was no disturbance in the acid-base balance of the blood.

This cannot be taken to mean that any of the sulfonamide drugs may be given carelessly, or for insignificant symptoms, or that the two above studied, sulfathiazole and sulfadiazine, have no harmful clinical effects. Medication which healthy young persons can endure without apparent injury may be much more damaging to persons who are already ill. The drugs in question may have had effects upon the blood-forming or other organs even of normal young men, which were not immediately apparent. It would appear probable that the newer compounds are a great improvement over the original sulfanilamide, and that in prophylaxis particularly, in which the drugs now appear to be used increasingly, the compounds with fewer constitutional ill effects should be employed.

TWENTY-FIVE YEARS AGO

From Journals of 1917

Dental Students and the Draft.[1]—Now that the Government has seen fit to exempt medical students and internes from the draft by admitting them to the Officers' Reserve Corps and paroling them 'till their prescribed training shall have been completed, the question arises: "What shall be the status of the dental students?" . . .

The present war in Europe has called into service the aid of numberless dentists for their assistance in the treatment of jaw fractures and in plastic work in injuries and resulting deformities in connection with the mouth. . . . The Dominion [of Canada] is already experiencing a shortage of dentists after only three years of war because dental students have been accepted in the line instead of having been importuned to return to their study. . . . The oldest dental school in America is located in the South—in Baltimore.

Memphis Meeting of the Southern Medical Association.[2]—War medicine and war surgery are the most important subjects that can be discussed by the medical profession at this time. . . . Among those . . . on the program . . . are: Col. R. E. Noble, Head of the Personnel Division of the Army; Col. G. E. Bushnell, Chief Assistant to the Surgeon-General; . . . Rear-Admiral Cary T. Grayson will represent the Navy. . . . The United States Public Health Service will be represented by Assistant Surgeon-General-at-Large H. R. Carter, Assistant Surgeon-General Kerr and others. . . .

An interesting feature of the occasion will be an address on, and a moving picture demonstration of, the Carrel-Dakin method of treating infected wounds and the paraffin treatment of burns by Dr. W. S. Sherman, of Pittsburgh, who spent a year in hospital work in France.

1. Editorial, Dental Students and the Draft. South. Med. J., **10**:886 (Nov.) 1917.

2. Editorial, The War Meeting at Memphis. South. Med. J., **10**:883 (Nov.) 1917.

Book Reviews

Symposium on Burns and Shock. Clinics. Volume 1, 1942, No. 1. Edited by George Morris Piersol, M.D., Professor of Medicine, Graduate School of Medicine, University of Pennsylvania, Philadelphia, Pa. 262 pages, illustrated. Philadelphia: J. B. Lippincott Company, Publishers.

In this symposium of six papers, the authors explain the pathologic physiology which follows a burn. The increase in the specific gravity and viscosity of the blood make whole blood transfusions dangerous in the early stages of treatment. When hypoproteinemia is present large amounts of sodium chloride are contraindicated as they increase the loss of plasma protein.

The authors classify shock as follows: dehydration shock, surgical shock, traumatic shock and hemorrhagic shock. The effect of shock on the blood pattern, on the heart, and on the tissues is discussed. According to the authors, plasma is the best intravenous therapy for the patient with burn shock and it should be given promptly and in sufficient amount.

The tanning method of treatment is advocated unless the burn is about the face or hands, as the resulting scars are more deforming. Other methods which are mentioned include sulfadiazine spray, sulfonamide ointments, vaseline gauze pressure dressings and Bunyan envelopes. It is said that the local and oral use of the sulfonamides will reduce the incidence of infection, but we are reminded that the use of these drugs must not compensate for gross errors in surgical care.

Skin grafting should be done early, as soon as the granulations are ready to receive the grafts. The error of waiting too long is more common than that of grafting too soon. The writers prefer split thickness grafts and only occasionally use pedicle flaps or Z flaps. The principles of repair in various regions of the body are stressed.

The treatment of any burn is incomplete until the burned surface is epithelized. The speed with which this is done, the comfort of the patient and the attainment

of a low mortality rate are three important factors in this problem.

Ambassadors in White. The Story of American Tropical Medicine. By Charles Morrow Wilson. 372 pages, illustrated. New York: Henry Holt and Company, 1942. Cloth $3.50.

The book is a history of tropical medicine in the Western Hemisphere, with biographies of some of its outstanding leaders. It contains some inaccuracies, or incorrect emphases.

The author overrates the importance of Noguchi in yellow fever. M. Thelier's substitution of mice for monkeys in experimental work, which was of great importance, is overlooked, as is the importance of Carlos Finlay's mosquito studies.

The contributions of Dr. W. E. Deeks are overrated, for he started with the hypothesis that carbohydrates are the cause of nutritional diseases.

Nott is wrongly credited with being the first in America to associate the mosquito with the transmission of yellow fever. He did not teach conveyance. He said that a minute insect living on or near the ground entered the body of man and thus caused yellow fever. No mention is made of Dr. A. J. Smith; or Dr. Theobald Smith, who discovered the transmission of Texas fever.

The description of Latin America is well presented. The book is readable and interesting.

Medical Progress Annual. Volume III, 1942. Managing Editor, Robert N. Nye, M.D. 678 pages. Springfield, Illinois: Charles C. Thomas, 1942.

A splendid feature of the *New England Journal of Medicine* is its weekly report, under the column head, "Medical Progress," usually by an outstanding contributor, covering significant advances in all fields of medical science. The reports range from yearly reviews in the respective fields of bacteriology, pathology, physiology, pharmacology, hematology, neurology, and psychiatry through the presentation of single subjects in dermatology, gastroenterology, endocrinology, and pediatrics to such purely clinical papers as "The Therapy of Meningitis" and "The Treatment of Degenerative Joint Disease." Publication of the entire series of reports in the "Medical Progress Annual" not only will permit non-subscribers to the *New England Journal* enjoyably and adequately to keep abreast of medical advances, but also will be welcomed by many regular readers. This is a convenient reference volume.

Facts for Childless Couples. By E. C. Hamblen, M.D., Associate Professor of Obstetrics and Gynecology, Duke University School of Medicine, Durham, North Carolina. 103 pages Springfield, Illinois: Charles C. Thomas, Publisher. Price $2.00.

This pocket-size volume of 103 pages is an ideal treatise for the sterile couple to read. It discusses the possible obstacles to fertility, their diagnosis and treatment, the many fallacies such as the ability to pronounce an individual fertile merely by physical examination; and above all it bolsters the morale of the childless who are in need of encouragement to continue prolonged studies and treatment when they are indicated.

Dr. Hamblen also has provided an invaluable book for the physician doing sterility work because it will save him hours of time usually spent in answering patients' questions. Incidentally the physician himself will learn a great deal from its perusal.

The Hand: Its Disabilities and Diseases. By Condict W. Cutler, Jr., M.D., F.A.C.S., Associate Surgeon, Roosevelt Hospital; Director of Surgery, Welfare Hospital. 572 pages, illustrated. Philadelphia: W. B. Saunders Company, 1942. Cloth $7.50.

To minimize the disability resulting from disease and injury to the hand is one of the greatest responsibilities of the surgeon. A thorough familiarity with its complicated anatomy is necessary for successful management of diseases and injuries of this part. The author devotes his first chapter to anatomy. Subsequent chapters deal with acute and chronic infections and specific diseases; burns and wounds of the soft parts; fractures, dislocations and amputations; restoration of function and repair and reconstruction of deformities; and tumors and constitutional diseases.

It is difficult to select a section for special comment among many excellent ones. However, the chapters on restoration of function and on repair and reconstruction are of unusual excellence.

Until one's attention is especially drawn to the subject, he is scarcely aware of the number and variety of new growths that are found on the hands, and of the large number of constitutional diseases that directly impair the functions of the hands. More than 100 pages are devoted to these two subjects.

Each chapter is followed by an extensive bibliography; the print is good; the work is profusely illustrated, and the author's style is very pleasing.

Competitive Swimming and Diving. By David A. Armbruster, Sr., M.A., Associate Professor of Physical Education and Head Swimming Coach, University of Iowa. 301 pages, illustrated. St. Louis: The C. V. Mosby Company, 1942. Cloth $3.25.

This is a subject which has been rather neglected in textbook writing. The various types of strokes are discussed in detail and shown in black and white drawings, as are the various diving forms. The text is well written and easily understandable. Excellent chapters on conditioning and training are included. A very good book for those interested in this sport.

Help Your Doctor to Help You When You Have Heart Disease. 47 pages. New York: Harper & Brothers, Publishers. Cloth 95c.

Heart disease is a condition that has made more invalids through fear than perhaps any other pathologic condition. This book tells in simple language the danger signs of heart trouble and why such things as palpitation, premature beats, air hunger, pains around the heart, gas under the heart, paroxysmal tachycardia and fainting have nothing to do with heart disease. The different cardiopathies are discussed and the methods of treatment are told the patient in a manner which will give him considerable hope.

Shock: Its Dynamics, Occurrence and Management. By Virgil H. Moon, A.B., M.Sc., M.D., Professor of Pathology, Jefferson Medical College, Philadelphia. 324 pages, illustrated. Philadelphia: Lea & Febiger, 1942.

Explanation of the phenomena of shock, its recognition and treatment have challenged investigators and clinicians for many years.

Moon has brought the discussion of these problems to the present time. He mentions numerous definitions of shock, and offers as his own the following: "Shock is a disturbance of fluid balance resulting in a peripheral circulatory deficiency which is manifested by decreased volume of blood, reduced volume flow, hemoconcentration, and by renal functional deficiency. This disturbance of fluid balance may originate from sundry and diverse causes, but each of them affects, either primarily or secondarily, the permeability of endothelium." The work is divided into two parts: Vascular Dynamics of Shock, and Prevention, Recognition, and Management of Shock.

A critical review of the different factors that enter into the production of shock is given, with an excellent summary of nearly every chapter.

The latest features in the clinical management of the shocked patient are described. Interesting chapters deal with prevention of shock, prevention of absorption, hemoconcentration, early recognition and differential diagnosis, therapeutics, including transfusion and blood substitutes.

The author has filled a need in supplying this excellent monograph.

From Cretin to Genius. By Dr. Serge Voronoff. 281 pages. New York: Alliance Book Corporation. Cloth $2.75.

Dr. Voronoff believes that there is a large element of chance in the development of creative processes. While he admits that he has never made a genius of a cretin, he has, through thyroid grafts, enabled them to "behave normally."

Help Your Doctor to Help You When You Have High Blood Pressure. 25 pages. New York: Harper & Brothers, Publishers. Cloth 95c.

This book supplements the physician in answering his patients' questions. The causes, general measures, drugs, and operative procedures for high blood pressure are each given their proper evaluation and the fears of the patient are greatly allayed.

Help Your Doctor to Help You When You Have Insomnia. 29 pages. New York: Harper & Brothers, Publishers. Cloth 95c.

Insomnia is discussed as due to nightmares, poor sleeping conditions, and to an array of other lesser causes. The methods of treatment that are elaborated are those that have given the most frequent relief as no one method has proven beneficial to all.

Southern Medical News

ALABAMA

Alabama Pediatric Association, at its recent annual meeting held in Birmingham, elected Dr. Amos C. Gipson, Gadsden, President, succeeding Dr. Clifford Lamar, Birmingham; and Dr. Sam Smith, Montgomery, Vice-President.

Dr. Tom D. Spies, on leave of absence as Associate Professor of Medicine, University of Cincinnati College of Medicine, Cincinnati, Ohio, is continuing his research at the Hillman Hospital, Birmingham. A large part of the research he has already done on vitamin deficiency was done at the Hillman Hospital and plans are being considered to enlarge his laboratory facilities for more extensive research. The invitation was extended to Dr. Spies to continue his research at Hillman Hospital by the Medical Advisory Board of the Hospital and the County Commission at a recent joint meeting.

Dr. Albert S. Dix, Opelika, has been appointed Director of Communicable Disease Control of the Mobile City and County Health Unit, succeeding Dr. Isaac C. Sumner.

Dr. Edwin N. Haller, Mobile, has been appointed Health Officer for DeKalb County.

Deaths

Dr. Coley C. Bowden, Troy, aged 56, died recently of carcinoma of the stomach.

Dr. William Andrew M. McConkey, Edmonton, aged 67, died recently of heart disease.

Dr. William Head McClendon, Roanoke, aged 70, died recently of heart disease and nephritis.

Dr. James Aaron Thorn, Vina, aged 67, died recently of appendicitis.

ARKANSAS

Dr. Lamar E. Alford, formerly of Groesbeck, Texas, has received his honorable discharge from the Army and is now associated with Dr. L. G. Fincher at Little Rock.

Dr. Raymond Cook, Little Rock, Lieutenant Commander, Naval Medical Corps, has been called to active duty and assigned to Naval Hospital, Pensacola, Florida.

Dr. E. G. Burt, Crossett, Lieutenant, Medical Corps, U. S. Army, has been ordered to duty at Camp Barkeley, Texas.

Dr. John Stathakis, Little Rock, has accepted an appointment with the Veterans Administration, Lincoln, Nebraska.

Dr. F. G. Engler, Little Rock, has been appointed Wing Personnel Officer, Arkansas Wing, Civil Air Patrol.

Dr. Chas. H. Lutterloh, Hot Springs National Park, Major, Medical Corps, U. S. Army, has been assigned to Air Force Replacement Center, St. Petersburg, Florida.

Dr. Paul Z. Browne, Hot Springs National Park, Major, Medical Corps, U. S. Army, has been called to active duty and assigned to Headquarters, Eighth Service Command, Fort Sam Houston, Texas.

Dr. John H. Pinson, Jr., El Dorado, Lieutenant, Medical Corps, U. S. Army, has been assigned to Morrison Field, West Palm Beach, Florida.

Dr. W. W. Chamberlain, Hot Springs National Park, Major, Medical Corps, U. S. Army, has been assigned to the Air Force at Jacksonville, Florida.

Dr. Glenn H. Johnson has been appointed Acting Head of the Department of Gynecology at the University of Arkansas School of Medicine, Little Rock.

Dr. L. J. Harrell has moved from Prescott to Bauxite.

Dr. W. J. Schwarz, Lake Village, has moved to Little Rock.

Dr. Jerome F. Brownson has moved from Leachville to Blytheville.

Deaths

Dr. Joseph Henderson Estes, Little Rock, aged 79, died recently.

Dr. Frank Marion Miller, Plainview, aged 62, died recently.

Dr. Albert S. J. Ragsdale, Russellville, aged 71, died recently.

Dr. John W. Ringgold, Ashdown, aged 72, died recently.

Dr. Roland Noah Smith, Augusta, aged 76, died recently.

Dr. Frank Vinsonhaler, Little Rock, aged 78, died recently.

Continued on page 50

KNOX GELATINE HELPFUL

In the Management of

... peptic ulcer

recent tests show favorable results

Further evidence has been published showing the effect of protein on acidity and pepsin activity. The protein used in the tests was plain, unflavored Knox Gelatine (U.S.P.). It was selected because of its purity, availability, ease of administration and solubility in the gastric contents.

Here are highlights from the report. For a complete reprint, including tabulated data, mail the coupon below.

All observations were made on patients who gave clinical and X-ray evidence of peptic ulcer. The patient presented himself in the fasting state. Samples of gastric contents were taken at 15-minute intervals for one hour.

When the effect of the protein was to be determined, a suspension of 15 Gm. of U.S.P. gelatine in 120 c.c. of tap water was given. Five to ten cubic centimeter samples of gastric contents were taken at successive fifteen-minute intervals for one hour.

Data presented show that protein in the form of gelatine, when introduced into the stomach, raises the pH markedly for at least 30 minutes and noticeably for 45 minutes; markedly lowers pepsin and free acidity of the stomach for 30 minutes and noticeably for 45 minutes, but has no effect on the total acid concentration.

DO NOT CONFUSE Knox Plain (Sparkling) Gelatine (U.S.P.) with inferior grades of gelatine or with preflavored, sugar-laden dessert powders. Knox Gelatine contains absolutely no sugar or other substances to cause gas or fermentation. Knox Gelatine is dependable for uniformity and strength. Your hospital will procure Knox for your patients if you specify it by name.

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All protein, no sugar

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Continued from page 1050

DISTRICT OF COLUMBIA

The construction of a $3,207,500 hospital has been approved for the District of Columbia. The plan to provide 550 beds is based on the recommendation made by the U. S. Public Health Service and the Vital Area Board of the District composed of representatives of the city, military services and other Federal agencies.

Dr. William L. Keller, Colonel, Medical Corps, U. S. Army Retired, Washington, has been appointed a member of a committee to study the medical services of the army.

Deaths

Dr. Robert T. J. Barber, Washington, aged 80, died recently of coronary sclerosis.

Dr. Samuel Evans Watkins, Washington, aged 71, died recently.

FLORIDA

Pinellas County Medical Society has elected Dr. W. C. McConnell, St. Petersburg, President; Dr. J. A. Hardenbergh, St. Petersburg, President-Elect; Dr. G. M. Lockner, St. Petersburg, First Vice-President; Dr. M. E. Black, Clearwater, Second Vice-President; and Dr. Annette M. Feaster, St. Petersburg, Secretary-Treasurer.

The personnel of physicians of the Medical Fee Schedule Committee which met in Jacksonville recently and reported to the Florida Industrial Commission are: Dr. A. M. Bidwell, Tampa; Dr. F. L. Fort, Jacksonville; Dr. Lloyd J. Netto, West Palm Beach; Dr. W. McL. Shaw, Jacksonville; Dr. Gilbert S. Osincup, Orlando; and Dr. Harrison W. Walker, Miami Beach.

Dr. Edward Jelks, Jacksonville, has been named Chairman of the new War Participation Committee, a committee appointed to replace the former Committee on Medical Preparedness.

Dr. J. L. Thorne, Miami, has moved his offices to 1001 Seybold Building.

Dr. Hugh A. Carithers, Jr., Jacksonville, and Miss Cornelia Mors, Auburn, New York, were married recently.

Dr. A. Buist Litterer and Mrs. Carolyn Coffin, both of Miami, were married September 5.

Dr. F. L. Snyder, Hollywood, and Miss Marie Lackey, Golden Beach, were married recently.

Deaths

Dr. Omer Frank Allen, Miami, aged 72, died recently following a gastroenterostomy.

Dr. Frederick Barnard Adams, Tampa, aged 78, died recently of bronchopneumonia.

Dr. Adam Isaiah Berninger, Bradenton, aged 76, died recently of acute myocarditis.

Dr. J. B. Colyer, St. Petersburg, aged 85, died recently of cerebral thrombosis.

Dr. Joseph Funk, St. Petersburg, aged 76, died recently of pneumonia.

Dr. Robert Ernest Gilbert, Winter Haven, aged 50, died recently of cerebral hemorrhage and chronic myocarditis.

Dr. Edwin Ward Mackey, Tampa, aged 72, died recently of diabetes mellitus.

Dr. Walter Dekel Ramsay, Noma, aged 74, died recently of bronchopneumonia and paralysis.

Dr. Alfred Merriman Rowley, St. Petersburg, aged 66, died recently.

Dr. Margaret Brinkerhoff Williams, Miami, aged 43, died recently of chronic glomerular nephritis.

GEORGIA

Dr. George O'Daniel, formerly of Washington, D. C., has assumed duties at Coker's Hospital, Canton, where he will be associated with Dr. Grady N. Coker and Dr. Robert T. Jones.

Dr. C. W. Churchill and Dr. F. N. Gibson, both of Thomson, have been appointed Senior and Junior local surgeons for the Georgia Railroad, respectively.

Dr. Robert L. Whipple, Jr., announces the opening of his

Continued on page 52

We cordially invite all members and guests of the SOUTHERN MEDICAL ASSOCIATION to visit FAIRCHILD BROS. & FOSTER'S Booth while in attendance at the Richmond meeting. FAIRCHILD BROS. & FOSTER, pioneers in digestive enzymes, will present:

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PEPSENCIA with VITAMIN B1 which supplies daily requirements of vitamin B1 in a rational vehicle properly balanced for absorption.

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If not the first, we were among the first to suggest dried brewer's yeast for the treatment of pellagra. The suggestion came from seeing the exceptionally good growth, reproduction and litter raising results when not over five per cent of the yeast was fed in a diet otherwise complete, but vitamin B free diet.

SHOULD BE POTENT IN IMPORTANT PARTS

Of course, it is important to know the potency of a dried brewer's yeast in thiamin, riboflavin, nicotinic acid and the other findable factors.

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Current animal assays for the whole of the heat labile B_1 show around 50 units per gram for both the Red Label (debittered) and Green Label (straight or undebittered) Vitafood Dried Brewer's Yeast.

IN THE WHOLE OF VITAMIN B_2

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POTENCY IN THIAMIN

A current assay from two of the country's leading laboratories shows the Red Label Yeast to contain an average of 134 micrograms of thiamin per gram; the Green Label an average of 168 micrograms of thiamin per gram. The Council on Pharmacy and Chemistry of the American Medical Association in considering dried brewer's yeast for inclusion in N. N. R. tentatively suggests a minimum of 120 micrograms of thiamin per gram.

POTENCY IN RIBOFLAVIN

The average potency of the Red Label Yeast as determined by the microbiological A. O. A. C. method is 42.2 micrograms of riboflavin per gram; the Green Label 47.6 micrograms per gram. The standard suggested for the N. N. R. is 40 micrograms per gram.

POTENCY IN NICOTINIC ACID (NIACIN)

The average nicotinic acid (niacin) content of the Red Label Yeast is 542 micrograms per gram; the Green Label is 547 micrograms per gram. The standard suggested for N. N. R. is 250 micrograms per gram.

NATURAL SOURCE—NO REINFORCEMENT

These dried brewer's yeasts are natural sources of the vitamin B complex; no reinforcement in any vitamin parts.

POTENT IN ALL OF VITAMIN B

The whole of the B vitamins must be had to do the full job. For this test, four pairs of male and female animals are put on an otherwise complete diet, devoid of any B vitamin factor, plus five per cent of the dried brewer's yeast.

Repeatedly, this test has given for both the Red and Green Label Dried Brewer's Yeast good growth, reproduction and litter rearing.

Currently in the laboratory young animals started at around 42 grams weight, are gaining on the Red Label Yeast at the rate of 15.75 grams per rat per week; on the Green Label at the rate of 16.5 grams, which is very good. The animals have good appetites, fine fur and bright eyes; are growing.

In selecting and shipping millions of pounds of dried brewer's yeast, so successfully aiding in the treatment and prevention of pellagra, this has been the main test. Dried brewer's yeasts complying with this test give uniformly successful results.

Samples for clinical or professional use will be sent on request.

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Continued from page 50

office in the Medical Arts Building, Atlanta, for the practice of internal medicine.

Dr. W. Frank Wells, Atlanta, was elected the Most Puissant General Grand Master of the Grand Council of Royal and Select Masons at Salt Lake City, Utah, at its triennial convention held in August.

Dr. B. W. Harris, formerly of Trion, has moved to St. Simons Island and opened offices for the practice of medicine.

Dr. F. H. Killam, formerly of Trion, has moved to Greensboro, where he will continue the practice of medicine.

DEATHS

Dr. William Walter Andrews, Tucker, aged 73, died recently of carcinoma of the left lung.

Dr. Josephus J. P. Bowdoin, Atlanta, aged 76, died recently of cerebral hemorrhage.

Dr. James Walker Curry, Rome, aged 67, died recently of myocarditis.

Dr. John Lipscomb Frazer, Fitzgerald, aged 75, died recently.

Dr. Manning W Manahan, Atlanta, aged 83, died recently of myocarditis.

Dr. Eddie C. McCall, Savannah, aged 79, died recently.

Dr. John Calvin McCall, Jr., Savannah, aged 66, died recently.

Dr. Donald F. S. Smith, Atlanta, aged 67, died recently of coronary thrombosis.

Dr. James A. Smith, Lyerly, aged 85, died recently.

Dr. Charles Sanford Williams, Norman Park, aged 83, died recently of valvular heart disease.

KENTUCKY

Dr. W. B. Troutman, Louisville, President of the Jefferson County Medical Society, has been commissioned a Major, Medical Corps, U. S. Army Air Forces.

Dr. Paul A. Turner, Hazelwood Sanatorium, Louisville, has been elected Regent of the American College of Chest Physicians, and Dr. Benjamin L. Brock, Waverly Hills Sanatorium, Waverly Hills, Governor of the College.

Dr. Roy Bingham, Director, Bel Air Sanatorium, Louisville, has been commissioned a Captain and assigned to Billings General Hospital, Fort Benjamin Harrison, Indiana. For the duration of the war the Bel Air Sanatorium will be closed.

Dr. C. Dwight Townes, Louisville, has been commissioned as Major, Medical Corps, Army Air Forces at Kelly Field, Texas.

Dr. Hugh E. House, Bloomfield, has been commissioned a Captain in the U. S. Army Medical Corps and ordered to report to Lawson General Hospital, Atlanta, Georgia.

Dr. T. A. Griffiths, formerly Secretary of the Rockcastle County Medical Society, Mt. Vernon, is now permanently located at Pineville, with offices in the Gaines Theatre Building.

Dr. Jacob Leland Tanner, Henderson, has been appointed Health Officer of Washington County.

Dr. William R. Kelsey, Monticello, has been named Health Officer for Clinton and Cumberland Counties in addition to Wayne County, succeeding Dr. Paul D. Moore, Albany, who has been transferred to Casey County.

Dr. Donald B. Thruber, Carlisle, has been appointed Director of the Tri-County Health District, consisting of Trimble, Carroll and Gallatin Counties.

DEATHS

Dr. John Malcolm Beck, Louisville, aged 62, died recently of carcinoma of the pharynx with metastases.

Dr. William A. Berry, Ashland, aged 80, died recently.

Dr. Andrew T. Botts, Glasgow, aged 73, died recently of cerebral hemorrhage.

Dr. George William Crice, Barlow, aged 69, died recently of cerebral hemorrhage.

Dr. Spencer P. Combs, Cornettsville, aged 61, died recently.

Dr. Frank W. Fischer, Covington, aged 68, died recently of coronary thrombosis.

Dr. Winn Estille Hord, Maysville, aged 55, died recently of hypertensive heart disease with nephritis.

Continued on page 54

SEDATIVE ANTISPASMODIC

BELLADENAL

BELLAFOLINE a sedative of vagus functions (l-rotatory belladonna alkaloids) gr. 1/250

PHENOBARBITAL a central sedative gr. 3/4

SUPPLIED: Tablets—tubes of 20, bottles of 100 and 500.

Scored tablets facilitate fractioning of dosage.

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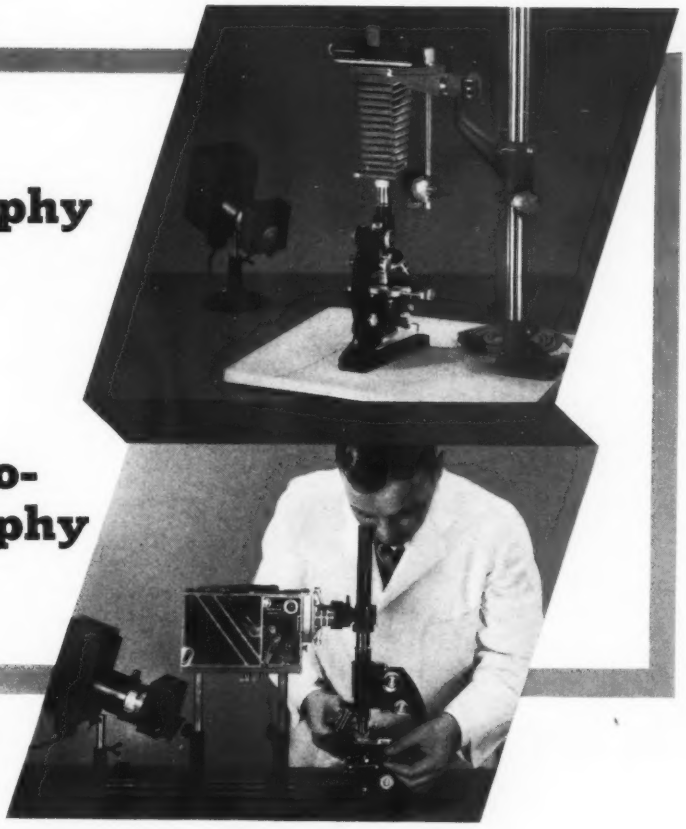

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Continued from page 52

Dr. William Henly Joynes, Sandy Hook, aged 66, died recently of lobar pneumonia.

Dr. Andrew Joe Lassiter, Adairsville, aged 84, died recently.

Dr. Julian Davis Miller, Mount Vernon, aged 40, died recently of uremia.

Dr. Thomas M. Nimmo, Eastview, aged 80, died recently.

Dr. John Wesley Shupert, Warsaw, aged 56, died recently of carcinomatosis.

Dr. James Arden Southall, Hopkinsville, aged 82, died recently of arteriosclerosis.

Dr. Charles G. Stephenson, Winchester, aged 72, died recently.

LOUISIANA

Southwest Allergy Forum will meet at Shreveport, March 12-13, 1943. Dr. W. H. Browning, Shreveport, is President, and Dr. Alan Cazort, Donaghey Building, Little Rock, Arkansas, is Secretary.

Dr. Ernest Carroll Faust, head of the Division of Tropical Medicine, New Orleans, recently conducted a short course in tropical medicine at the U. S. Army Medical School, Washington, D. C. Dr. Faust has been Consultant in Tropical Medicine at the Army Medical School since 1941.

Dr. John H. Musser, Professor of Medicine, Tulane University of Louisiana School of Medicine, New Orleans, has been appointed a member of a committee to study the medical services of the Army, the Committee's study to help the Army Medical Department to maintain the high standards of professional efficiency.

MARYLAND

Dr. G. Canby Robinson, Baltimore, head of the American Red Cross Blood Donor Service, was presented the Army-Navy E pin at special ceremonies in Washington, D. C., in September.

Dr. Lay Martin, Associate in Medicine, Johns Hopkins University School of Medicine, Baltimore, is making a trip through Central and South American countries under an appointment by Nelson A. Rockefeller, coordinator of Inter-American affairs.

Dr. George W. Corner, Baltimore, Director of the Department of Embryology of the Carnegie Institution of Washington, has had conferred upon him the degree of doctor honoris causa by the Catholic University of Chile.

Dr. Louis B. Flexner, a member of the Department of Anatomy, Johns Hopkins University School of Medicine, Baltimore, has been given a leave of absence to serve as aide to the Committee on Aviation Medicine of the National Research Council.

Dr. Lewis H. Weed, Professor of Anatomy, Johns Hopkins University Medical School, Baltimore, and Chairman, Division of Medical Sciences, National Research Council, has been appointed a member of a committee to study the medical services of the Army.

Deaths

Dr. Bruce Hetrick Guistwhite, Cumberland, aged 54, died recently of cerebral hemorrhage.

Dr. Frederick Williamson Hobelmann, Baltimore, aged 66, died recently of heart disease and bronchiogenic carcinoma.

Dr. Henry W. Hodgson, Cumberland, aged 96, died recently of pneumonia.

Dr. John Wilson Hunter, McDaniel, aged 67, died recently of carcinoma of the bladder.

Dr. David Thomas Lesher, Williamsport, aged 88, died recently of chronic myocarditis and arteriosclerosis.

Dr. Harry Wall, Middle River, aged 61, died recently of coronary occlusion.

Dr. Jacob Louis Winner, Baltimore, aged 70, died recently of arteriosclerosis.

Dr. Ira Jay McCurdy, Frederick, aged 73, died recently of complications following injuries received in a fall.

Dr. Sidney Hamilton Streett, Baltimore, aged 59, died recently of coronary thrombosis.

Dr. Charles S. Woodruff, Baltimore, aged 73, died recently of chronic nephritis.

Continued on page 56

For the Failing Heart

Phyllicin

A "theophylline" for oral administration — quick acting and well tolerated. For the relief of cardiac distress and pain, to diminish dyspnoea and to reduce edema.

DOSE: 1 or 2 tablets (4 grains each) after meals.

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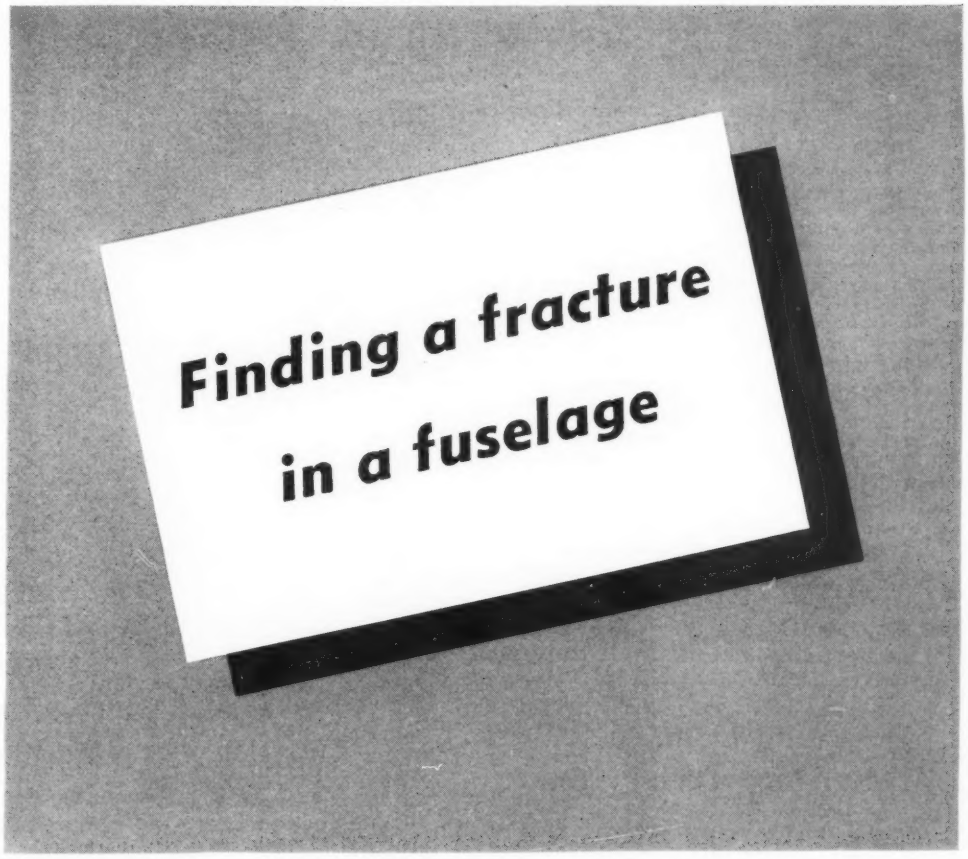

RECENTLY Agfa Ansco discovered an extraordinary x-ray emulsion for industrial use. It permits the detection of extremely minute defects—in airplane parts for example—by inspection under a magnifying glass. The technique is similar to that used by many roentgenologists with Agfa Ansco Non-Screen X-Ray Film.

While this new industrial film is not practicable for use with standard medical equipment, the knowledge it has given us will be of inestimable value in the future. Much of our present accelerated industrial x-ray research we hope will be turned advantageously to the roentgenologist's use.

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Plastigut is used in smaller sizes, due to its greater tensile strength. Plain Plastigut is offered in sizes No. 00, 0000 and 00000. Black, for skin work, is offered in sizes No. 0, 0000 and 00000. Size No. 00 is recommended for all general work, size No. 0000 for ties, size No. 00000 for plastic surgery and No. 0 for heavy tension sutures.

Price—Plastigut Sutures in Sterile Tubes, length 60 inches, all sizes. Dozen, $3.00. Gross, $29.50. Three-gross lots, per gross, $27.50.

References to the literature provided on request.

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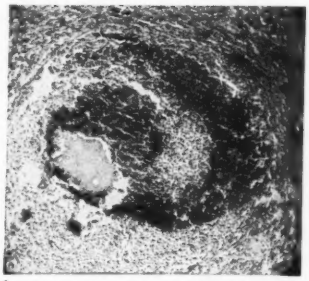
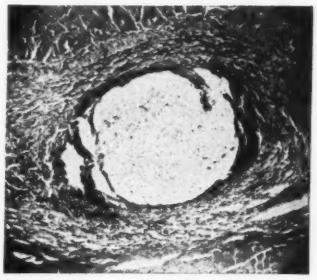


Plain catgut suture at two weeks; note absorption and inflammation.



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Continued from page 54

MISSISSIPPI

Dr. Robert P. Walton, Ph.D., Professor and head of the Department of Pharmacology, University of Mississippi School of Medicine, University, has accepted a professorship in pharmacology at the Medical College of the State of South Carolina, Charleston, South Carolina.

Dr. George E. Riley, Jackson, has been appointed Director of Hinds County Health Department.

Dr. Curtis M. Roberts, New Albany, has resigned as Health Officer of Prentiss County to accept a similar position in Clay County.

Dr. Frank L. McGahey, formerly of Calhoun City, has been appointed Chief of the Grenada County Health Department.

Dr. and Mrs. W. L. Little, Wesson, recently celebrated their golden wedding anniversary.

DEATHS

Dr. R. S. Curry, Jackson, aged 80, died recently.

Dr. R. C. Cunningham, Booneville, aged 84, died recently.

MISSOURI

Dr. Clyde P. Dyer, St. Louis, presided at the meeting of the Mississippi Valley Medical Editors' Association at Quincy, Illinois, in September and presented his President's address.

Dr. Evarts Ambrose Graham, Professor of Surgery, Washington University School of Medicine, St. Louis, has been appointed a member of a committee to study the medical services of the Army.

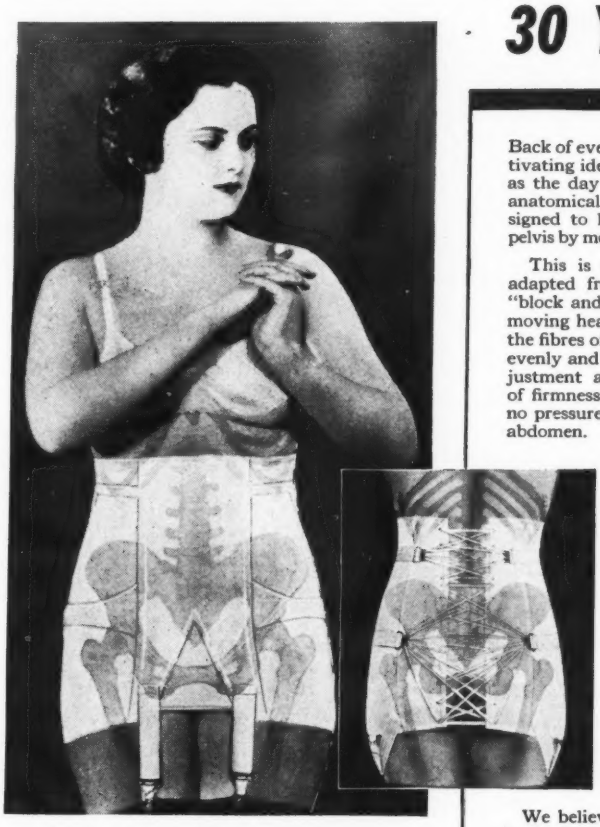
Dr. J. Wallace Findley, Graham, and Miss Mary Virginia Covington, St. Louis, were married recently.

DEATHS

Dr. Herbert Claude Anderson, Kansas City, aged 66, died recently of carcinoma of the throat.

Continued on page 58

It takes a Good Idea to live 30 YEARS...



Illustrating function of Camp support.
Actual photographs with skeletons indrawn.

Back of every Camp Support is one motivating idea . . . as fresh and authentic as the day it was born. It is to make anatomical supports—scientifically designed to lay a foundation about the pelvis by means of the Camp adjustment.

This is an arrangement of lacings adapted from the familiar system of "block and tackle" used in lifting and moving heavy weights. By bringing all the fibres of the material of the support evenly and perfectly into play, this adjustment achieves the desired degree of firmness about the pelvis and thus no pressure upon the spinal column or abdomen.

During 30 years—though the basic idea remains unchanged—Camp supports have been constantly improved by incorporating ideas gleaned from specialists prominent in their respective fields and from our own experience in handling materials and fitting patients.

You will find that special consideration has been given to type-of-build and to proportionate irregularities . . . for instance, the pendulous abdomen, the varied length of the gluteal line and enlarged thighs.

We believe our continuing advances in the field of scientific supports are in keeping with our tradition of service to the medical profession.

CAMP Supports

Made by S. H. Camp and Company, Jackson, Michigan. World's Largest Manufacturers of Scientific Supports. Offices in New York, Chicago, Windsor, Ont., London, England.

Fundamental Accomplishments in the Design and Construction of the Camp System of Supports

- Ability to secure varying degrees of firmness about the pelvis.
- Adequate support of the abdomen without compression.
- Ample support of the spinal column without pressure upon any portion.
- Support of the gluteal region.

Continued from page 56

Dr. John St. Avit, Cape Girardeau, aged 78, died recently of angina pectoris.

Dr. Francis Bacon Camp, Springfield, aged 45, died recently.

Dr. Albert William Ebeling, Warrenton, aged 73, died recently of carcinoma.

Dr. Otto Wilhelm Freitag, St. Louis, aged 77, died recently of injuries received when struck by an automobile.

Dr. Forest Field Foster, Kansas City, aged 52, died recently of injuries received in an automobile accident.

Dr. Julius Henry Gross, St. Louis, aged 70, died recently of carcinoma.

Dr. George F. Hamel, Kansas City, aged 78, died recently of cerebral hemorrhage.

Dr. George McArdle Powell, Springfield, aged 52, died recently of tuberculosis.

Dr. James Arthur Shacklett, Ethel, aged 66, died recently.

Dr. William T. Steger, St. Louis, aged 73, died recently of heart disease.

Dr. J. Barry McDaniels, Springfield, aged 71, died recently.

Dr. Otto Lewis Muensch, Washington, aged 81, died recently.

Dr. Benjamin Warren Vaughan, Columbia, aged 65, died recently of cerebral hemorrhage.

Dr. James Henry Winter, Parkville, aged 71, died recently.

NORTH CAROLINA

Dr. Charles H. Phillips, Thomasville, was presented with a gold headed cane recently when he was guest of honor at a dinner given by the Davidson County Medical Society to observe the completion of fifty years in the practice of medicine.

Dr. Robert B. Lawson, Chapel Hill, has been named Assistant Professor of Pediatrics at the Bowman Gray School of Medicine of Wake Forest College, Winston-Salem.

Dr. Julian W. Ashby has resigned as Superintendent of the State Hospital, Raleigh, having become eligible for retirement, and Dr. John F. Owen, Raleigh, formerly Assistant, has been named Acting Superintendent.

Dr. Frank K. Harder, formerly Assistant Health Commissioner of Cincinnati, Cincinnati, Ohio, has been appointed head of the Greensboro Health Department.

Dr. Walter E. Wilkins, Raleigh, Director of the Division of School Health Service for the State Board of Health, has been made Consultant in Nutrition to the Office of Defense Health and Welfare Services in Washington.

Dr. Roy H. Long, Assistant Superintendent and for more than twenty years a member of the staff of the State Hospital at Morganton, resigned recently on account of ill health.

Deaths

Dr. Miles Burwell Abernethy, Reidsville, aged 61, died recently.

Dr. Cornelius H. Brantley, Bailey, aged 82, died recently.

Dr. Giles Mortimer Fleming, Cleveland, aged 50, died recently of coronary thrombosis.

Dr. James Madison Harper, Raleigh, aged 66, died recently of uremia and pericarditis.

Dr. Brunson Burns Matthews, Shelby, (Captain, Medical Corps, U. S. Army), aged 39, died recently while stationed at Camp Blanding, Florida.

Dr. William Eugene Whittington, Reddies River, aged 54, died recently of heart disease.

Dr. Frederick Stanly Whitaker, Kinston, aged 59, died recently.

OKLAHOMA

Northeastern Oklahoma Clinical Society at its annual meeting held in Muskogee recently elected Dr. M. M. DeArman, Miami, President; Dr. J. S. Allison, Tahlequah, Vice-President; and Dr. H. C. Ballantine, Muskogee, Secretary.

Cleveland County Medical Society has elected Dr. Joseph A. Rieger, Norman, President; Dr. Felix Gastineau, Norman, Vice-President; and Dr. Curtis Berry, Secretary. These physicians were elected to fill unexpired terms of those elected at the beginning of the year who are now serving in the armed forces. Another election will be held in January, at which time officers for 1943 will be elected.

Continued on Page 60

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Continued from page 58

Dr. Robert U. Patterson, Major General, U. S. Army, retired, who for several years was Dean of the University of Oklahoma School of Medicine, Oklahoma City, has submitted his resignation to the Board of Regents of the University, having reached the retirement age of 65.

Mr. Robert H. Graham, Oklahoma City, Executive Secretary of the Oklahoma State Medical Association, has been granted a leave of absence to serve as Executive Assistant to Lieutenant Commander Maxwell E. Lapham of the Procurement and Assignment Service, Washington, D. C. Miss Ann Betche, Assistant Secretary, will carry on the work of the executive office.

DEATHS

Dr. Gavin H. Butler, Heavener, aged 71, died recently.

Dr. Samuel Hubbard Gaines, Lucien, aged 59, died recently.

Dr. Chester Lee Hill, Yale, aged 68, died recently.

Dr. Arthur Stephenson Spangler, Pauls Valley, aged 68, died recently of pulmonary embolism.

SOUTH CAROLINA

The Alumni Association of the Medical College of the State of South Carolina is sponsoring a Refresher Course which will be held in Charleston at the Medical College, November 4 and 5. Dr. J. I. Waring, Charleston, is Chairman of the Committee on the Refresher Course.

Piedmont Post-Graduate Assembly at its eighth annual session held in Anderson in September elected Dr. George R. Wilkinson, Greenville, President; Dr. J. R. Young, Anderson, Executive Vice-President; Dr. J. T. Davis, Walhalla, Dr. C. J. Scurry, Greenwood, and Dr. J. Warren White, Greenville, Vice-Presidents; Dr. A. L. Smethers, Anderson, Secretary-Treasurer, reelected, and Dr. J. N. Land, Anderson, Registrar.

Dr. Robert B. Taft, Charleston, was one of the instructors at the Refresher Course given during the September meeting of the American Roentgen Ray Society.

Dr. James S. Fouche, who for many years was associated with the Veterans Administration, has opened an office for private practice at 1515 Bull Street, Columbia.

Dr. Edith Eskrigge has moved her office to 1515 Bull Street, Columbia.

Dr. R. B. Durham, Columbia, has been named Consultant Surgeon to the University of South Carolina, Columbia, to serve during the absence of Dr. George Benet, who is in Army service.

Dr. Edward H. Thomason, Olanta, has been ordered to duty with the Medical Corps, U. S. Army, and will be temporarily stationed at Wellston Air Depot near Macon, Georgia.

Dr. Gertrude Holmes, Greenville, spent two weeks recently in Boston studying cardiology under Dr. Paul White.

Dr. A. Eugene Brown, Greenville, has just returned from Illinois, where he has been taking a course in ophthalmology.

Dr. J. D. McBrearty, Williamson, and Miss Sarah Hepburn were married October 19.

Dr. H. M. Allison, Greenville, has reported for military service.

DEATHS

Dr. Maxcy Lee Brogden, West Columbia, aged 57, died recently.

Dr. Julius Christian Sosnowski, Wadmalaw Island, aged 65, died recently of heart disease.

Dr. James Andrew Quinn, York, aged 25, died recently of Hodgkin's disease.

Dr. Lee Jackson Wall, Easley, aged 84, died recently of chronic myocarditis, chronic nephritis and arteriosclerosis.

TENNESSEE

Dr. Guy H. Williams, Nashville, has moved to Norman, Oklahoma.

Dr. D. C. McPool, formerly of Canton, Mississippi, has moved to Memphis.

Dr. Robert E. Sullivan, Nashville, announces that his practice is now limited to ophthalmology.

Dr. Felix A. Hughes, Jr., Memphis, Captain, Medical Corps, U. S. Army, is now stationed at Station Hospital, Camp Rucker, Alabama.

Dr. C. Harold Avent, Memphis, Captain, Medical Corps, U. S.

Continued on page 62

Authorities in the field of nutrition are today stressing the need for maintaining vitamin D protection beyond the arbitrary age of 2 to 2½ years.

Optimal growth and skeletal formation depend on normal calcium metabolism during the *entire period* of the individual's development. (Additionally, of course, adult groups such as pregnant and nursing women and persons confined indoors commonly require supplemental vitamin D).

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. . . providing the vitamins A and D of time-proved cod liver oil

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FOR INFANTS—there is the convenient *Liquid Form*. Two drops provide the vitamin A and D potency of one teaspoonful of cod liver oil.*

FOR THE CHILD OVER 2 OR 2½ YEARS—the equally convenient, pleasant, easy-to-take *Tablets*. Each tablet provides the vitamin A and D potency of one teaspoonful of cod liver oil.*

FOR LARGER DOSAGE—or wherever capsular medication is preferred—the small, easily-swallowed *Capsules*. Each capsule provides the vitamin A and D potency of approximately 1½ teaspoonfuls of cod liver oil.*

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Continued from page 60

Army, is stationed at Third Auxiliary Surgical Group, Fort Sam Houston, Texas.

Dr. H. B. Nevans, Livingston, is at Camp Butler, North Carolina.

Dr. Maurice Seligman, Nashville, Captain, Medical Corps, U. S. Army, is at Oklahoma City.

Dr. Paul W. Cox, Kingsport, Captain, Medical Corps, U. S. Army, is at Station Hospital, Camp Shelby, Mississippi.

Dr. C. Barton Etter, Memphis, is at Fort Meade, Maryland.

Dr. Thomas B. Drinnen, Knoxville, Lieutenant, Medical Corps, U. S. Army, is at 48th General Hospital, Camp Rucker, Alabama.

Dr. Paul R. Swanson, Chattanooga, 1st Lieutenant, Medical Corps, U. S. Army, is at El Paso, Texas.

Dr. John C. Burch, Nashville, Lieutenant Colonel, Medical Corps, U. S. Army, is at Fort Sam Houston, Texas.

Dr. Alvin Brush Tripp, Memphis, is at Tampa, Florida.

Dr. C. E. Irwin, Knoxville, is at Camp Rucker, Alabama.

Dr. L. R. Gayden, Nashville, Captain, is at Maxwell Field, Montgomery, Alabama.

Dr. James F. Morton, Kingsport, 1st Lieutenant, Medical Corps, U. S. Army, is in Company D, 313 Medical Battalion, 88th Infantry Division, Camp Gruber, Muskogee, Oklahoma.

Deaths

Dr. John Quincy Adams West, Knoxville, aged 72, died recently of chronic pancreatitis.

Dr. John P. Conway, Memphis, aged 69, died recently of cerebral hemorrhage.

Dr. James Johnson Fleming, Atoka, aged 58, died recently of pneumonia.

Dr. Max Kaplan, Memphis, aged 51, died recently of carcinoma of the lung.

Dr. Thomas A. Langford, Hilham, aged 87, died recently.

Dr. William Thomas Robinson, Murfreesboro, aged 54, died recently of cerebral thrombosis.

Dr. John Wesley Sutton, Petersburg, aged 80, died recently of cerebral hemorrhage.

Dr. William M. Wilson, Tullahoma, aged 69, died recently of an infection of the arm.

Dr. Robert Otis Williams, Humboldt, aged 68, died recently of arteriosclerosis.

TEXAS

Texas Society of Pathologists will meet at Dallas, January 31, 1943. Dr. T. C. Terrell, Fort Worth, is President; and Dr. John J. Andujar, 1300 West Cannon Avenue, Fort Worth, is Secretary.

Heath Hospital, Madisonville, was recently closed as announced by the owner, Dr. J. B. Heath. The Heath Memorial Clinic will remain open.

Dr. Titus Harris, Professor of Neurology and Psychiatry at the University of Texas School of Medicine, Galveston, has been appointed by the Board of Regents of the University of Texas School of Medicine as Acting Dean of the School.

Dr. Ozro T. Woods, Chief of Emergency Health and Medical Service for the Dallas City-County Civilian Defense Council, has announced the beginning of classes for physicians on the treatment of persons injured by war gases, the classes to be taught at Baylor University College of Medicine by Dr. G. A. Davidson, Assistant Professor of Clinical Medicine, and Dr. Walter Cochran, Assistant Professor of Clinical Surgery.

Dr. Felix P. Miller, El Paso, has been appointed a member of the Procurement and Assignment Service Committee for Physicians, Dentists and Veterinarians of the Eighth Corps Area.

Dr. Raymond F. Blount, formerly of the Department of Anatomy, University of Pennsylvania School of Medicine, Philadelphia, was recently appointed Associate Professor of Anatomy of the University of Texas School of Medicine, Galveston, succeeding Dr. J. J. Lawless, who has gone to West Virginia.

Dr. Ernest W. Graumbles, Atlanta, was recently elected Director of the Atlanta Federal Savings and Loan Association.

Dr. Lamar E. Alford, formerly of Groesbeck, has received his honorable discharge and is now associated with Dr. L. G. Fincher, El Dorado, Arkansas.

Dr. Stanley J. Seeger, Texarkana, has been named Consultant to the Division of Industrial Hygiene of the National Institute of Health. Dr. Seeger will maintain contact with the state and

Continued on page 64

"FEED THE INFANT—FROM THE MOMENT OF CONCEPTION"*

To safeguard against the later development of deficiency diseases such as rickets, and, on the positive side, to insure maximum growth and development, it is essential to "feed the infant not only from the moment of birth but *from the moment of conception.*"*

A pleasant, easily digested and highly effective method of stepping up the intake of vital *protein, calcium* and *vitamins* during pregnancy is provided in

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Protein—Horlick's provides the biologically complete proteins of milk supplemented by those from wheat and malted barley.

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*Toverud, K.U.: Acta Paediat, 17: 136, 1935.

HORLICK'S

Continued from page 62

county medical societies to acquaint physicians with the growing importance and demands of practice.

Dr. Henry T. Safford, Sr., El Paso, was elected first honorary member of the Texas State Association of Medical Anesthetists at its recent annual meeting in Houston.

Classified Advertisements

RATES for insertion in the Classified Column are as follows: $2.00 minimum, which includes the first 50 words; for each word in addition to the original 50 words, the charge is 3c.

EDITING—Preparation of papers and reports, indexing, abstracting, bibliographies and similar services to physicians. Address inquiries to Elizabeth M. McFetridge, M.A., 4810 St. Charles Avenue, New Orleans, Louisiana.

BOOKBINDING—Southern Medical Journal bound in attractive, substantial Buckram Library Binding, backs gold tooled, $2.50 per volume. Write us for prices on other books you want bound; magazines, journals, Bibles or anything you want to put in book form. Reference, Southern Medical Association. Alabama Trade Bindery, General Bookbinders, 1627½ First Avenue, North, Birmingham, Alabama.

POSITION WANTED—General surgeon with wide gynecologic experience and with quite extensive industrial and traumatic experience desires change to better environment. Now surgeon to a large industrial hospital. Draft exempt, 44, licensed Texas, Arkansas and Kentucky. Member of State and Southern Medical Associations. Compensation open. Small hospital or clinic preferred. AB, care Southern Medical Journal, Birmingham, Alabama.

MEDICAL OFFICERS NEEDED—Tennessee Valley Authority is in urgent need of medical officers who are not eligible for military service and who are willing to accept assignments to war industrial activities (construction, manufacture of war chemicals, and manufacture of hydroelectric power) as their participation in the all out war effort. Responsibilities include physical examinations, industrial hygiene, care of injuries, medical care to families in remote construction areas, and general public health responsibilities in construction camps and villages. Salary ranges from $3,200 to $4,200 per annum with opportunity for promotion. For further information write to Dr. E. L. Bishop, Director of Health, Tennessee Valley Authority, Chattanooga, Tennessee, or to the Personnel Department, Tennessee Valley Authority, Knoxville, Tennessee.

Deaths

Dr. Emil Aronson, Dallas, aged 79, died recently of uremia, diabetes mellitus and hypertrophy of the prostate.

Dr. Kossie Long Buckner, Denton, aged 61, died recently.

Dr. George McD. Callaway, San Antonio, aged 82, died recently of arteriosclerosis.

Dr. Vernon Albert Dean, Talco, aged 33, died recently of pneumonia, acute hepatitis and acute nephritis.

Dr. James C. R. Gathings, La Feria, aged 79, died recently.

Dr. Roger Walker Gray, Crane, aged 44, died recently.

Dr. John William Fitzgerald, Beaumont, aged 75, died of senility.

Dr. T. R. Flaniken, Rogers, aged 70, died recently of cerebral hemorrhage.

Dr. Frank Ripley Halstead, Corpus Christi, aged 76, died recently of accidental drowning.

Dr. Raymond P. Harben, Dallas, aged 82, died recently of myocarditis.

Dr. Theodore Hudson Harrell, Mission, aged 67, died recently.

Dr. M. P. McElhannon, Belton, aged 62, died recently.

Dr. Edward Stanhope Smythe, Houston, aged 74, died recently.

Dr. Scurry Latimer Terrell, El Paso, aged 72, died recently.

Dr. Frank S. White, Terrell, aged 83, died recently of carcinoma of the rectum and liver.

Dr. Oscar M. Tinsley, Houston, aged 68, died recently of hepatitis and hypostatic pneumonia.

VIRGINIA

Southern Psychiatric Association will hold its annual meeting in Richmond at the Jefferson Hotel, November 6-7. Dr. Whitman C. McConnell, St. Petersburg, Florida, will preside. Dr. James K. Hall, Richmond, is President-Elect. Further information about the meeting may be obtained from the Secretary, Dr. Newdigate M. Owensby, Atlanta, Georgia.

Fairfax County Medical Society has elected Dr. Elmer Waring, Fairfax, President; Dr. Charles Finnegan, Falls Church, Vice-President; Dr. Alice Heyl Kiessling, Falls Church, Secretary, reelected; and Dr. Emmanuel Newman, Falls Church, Treasurer.

Halifax and Pittsylvania Counties have been consolidated under the supervision of Dr. D. C. Steelsmith, the unit to be known as the Halifax-Pittsylvania Health District, with headquarters at South Boston.

Nelson County Medical Society has elected Dr. Lyddane Miller, Amherst, President; Dr. Homer E. Clarke, Massies Mill, Vice-President; and Dr. J. F. Thaxton, Tye River, Secretary-Treasurer, reelected.

Dr. M. E. McRae, formerly Health Officer of Pittsylvania County, succeeds Dr. Samuel S. Shouse, Health Officer of the Page-Warren-Shenandoah Health District, Dr. Shouse having been granted a leave of absence to enter military service.

Dr. C. E. Waller, Health Officer of the Fairfax-Loudoun-Prince William-Stafford Health District, will remain as Health Officer of Loudoun County with headquarters at Leesburg, being relieved of the other counties. Dr. James A. Dolce, of the U. S. Public Health Service, succeeds Dr. Waller as Health Officer of Fairfax,

Continued on page 66

LaMOTTE BLOOD CHEMISTRY SERVICE

LaMOTTE HEMOGLOBINOMETER

This outfit was developed to estimate the hemoglobin in terms of grams per 100 ml. of blood. The blood sample is treated with hydrochloric acid which converts the hemoglobin into acid hematin, and this is compared with the known color standards. The result is read off directly. Outfit includes comparator case with all necessary equipment and complete instructions. Price $10.00 f.o.b. Towson, Md.

This Service includes a series of similar outfits for conducting the following accurate tests: Blood Sugar, Icterus Index, Phenolsulphonphthalein, Urine pH, Sulfanilamide, Sulfapyridine, Sulfathiazole, Blood pH, Gastric Acidity, Calcium-Phosphorus, Blood Bromides, Blood Proteins, Urinalysis.

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More and more physicians are recommending this delicious food drink for the entire family. The rich, full flavor of COCOMALT, either hot or cold in milk, is a delightful drink for those who will not ordinarily drink milk alone.

Cocomalt

ENRICHED FOOD DRINK

R. B. DAVIS COMPANY, Hoboken, N. J.

Continued from page 64

Prince William and Stafford Counties, with headquarters at Fairfax.

Dr. E. W. Langs, Assistant Health Officer to the Fairfax-Loudoun-Prince William-Stafford Health District, has been transferred to the Giles-Montgomery-Radford Health District as Assistant Health Officer with headquarters at Christiansburg.

Dr. Daniel Hope, Jr., Health Officer of Alleghany-Botetourt Health District, has resigned to enter military service and Dr. George C. Snead has taken over this work with headquarters at Covington.

Dr. John Paul Jones, Lieutenant, Medical Corps, USNR, and Miss Elizabeth Hyman Adkins, Richmond, were married recently.

Dr. Elmer Shackelford Robertson, Richmond, and Miss Margaret Hannah Armstrong, Hillsville, were married recently.

Dr. John Rogers Mapp, Lieutenant, Medical Corps, U. S. Army, and Miss Sarah Rebecca Moore, Pageland, South Carolina, were married recently. Dr. Mapp is affiliated with the University of Virginia Evacuation Hospital Unit No. 8.

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Established 1897
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Practical postgraduate course in Ophthalmology and Otolaryngology.

Doctors admitted at any time for review and clinical observation.

OSCAR B. NUGENT, M.D., Director

Dr. George Andrew Shetter, Richmond, and Miss Dorothy Lenore Suade, Gardner, Massachusetts, were married recently.

Dr. Archibald C. Randolph, Upperville, and Mrs. Theodore Ayer Winthrop, Middleburg, were married recently.

University of Virginia Medical Faculty has had the following changes: Dr. H. B. Mulholland has been appointed Assistant Dean; Dr. Samuel Alexander Vest has been promoted from Associate Professor to Professor of Urology; Dr. Lawrence T. Royster has resigned as Professor of Pediatrics, having been Professor of this Department since 1923; and Dr. Robert Bennett Bean has retired as Professor of Anatomy.

Dr. E. C. Gates, Bristol, Chesterfield County Health Officer, has been appointed Director of the county OCD Emergency Medical Services.

Dr. D. Lane Elder has just been reelected a member of the Hopewell City Council, of which body he has been a member twenty-two years, and he has been Mayor of that city for twenty years.

Dr. John L. Couper, after a year at St. Luke's Hospital, New York City, has located in Lexington.

Dr. H. L. Baptist, formerly of Ivy Depot, has moved to Troutville, where he has taken over the practice of Dr. S. F. Driver, who has left for military service.

Dr. D. F. Love, formerly of New Market, has returned to Harman in Buchanan County.

Dr. James K. Morrow, Little Rock, Arkansas, is now associated with St. Albans Sanatorium, Radford, having succeeded Dr. Wiley D. Lewis, who has entered the U. S. Army Medical Corps.

Dr. Marshall T. Vaden, Buena Vista, has been appointed Chief of the Emergency Medical Service for Buena Vista and Rockingham Counties.

Dr. Garland M. Harwood, Richmond, has been appointed Acting Medical Director of the Life Insurance Company of Virginia, taking over the duties of Dr. Ennion S. Williams, who recently resigned to enter the Navy service.

DEATHS

Dr. Luther M. Abbott, New Castle, aged 72, died recently.

Dr. Thomas Lea Brooks, Oceana, aged 65, died recently.

Dr. Joseph Lynn Deitrick, Ocean View, aged 74, died recently.

Dr. Camillus F. Eason, Hickory, aged 65, died recently of coronary occlusion.

Dr. Julian T. Miller, Portsmouth, aged 70, died recently.

Dr. John Rowlands Shannon, Richmond, aged 78, died recently of uremia.

Dr. Alexander Watkins Terrell, Lynchburg, aged 81, died recently.

Dr. Joseph H. Winfrey, Glenallen, aged 70, died recently.

WEST VIRGINIA

Dr. Walter E. Vest, Huntington, was elected Second Vice-President of the American Geriatrics Society, a new society formed at Atlantic City in June.

Dr. William Minor Deyerle, Bluefield, and Miss Frances Mozelle Hood, Richmond, were married recently.

DEATHS

Dr. Benjamin E. Harrison, Cottageville, aged 86, died recently.

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Discriminating Physicians are Prescribing
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THEOPHYLLINE-ETHYLENEDIAMINE

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Looking at Alka-Zane from every viewpoint of clinical application, one can readily see how well it fills the role of a well-balanced systemic alkalizer.

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Alka-Zane makes a zestful and refreshing drink. Its pleasing taste is especially appreciated when palatability counts most, as in the "morning sickness" of pregnancy. Why not observe the usefulness of Alka-Zane in this, as well as other conditions requiring an alkalizer, by giving it a trial? We shall gladly send a supply if you will write a request on your letterhead, addressing it to the Department of Professional Service. Alka-Zane is available in bottles of 1½, 4 and 8 ounces.

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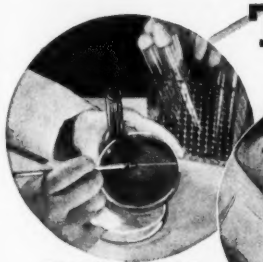
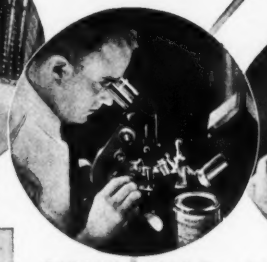


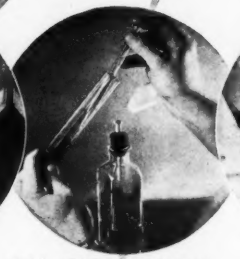
BLOOD AGAR TEST

To assure absence of hemolytic streptococci



DIRECT MICROSCOPIC TEST

To give rapid sanitary control and microbiological history



GAS PRODUCTION TEST

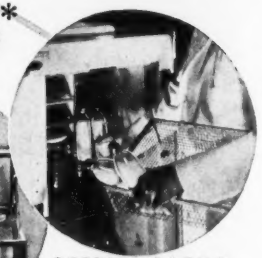
To assure absence of gas-fermentation bacteria

PLATE COUNT (Microbiological Count)

To assure absence of fungi and to confirm sanitary quality

ACTION IN MILK

To assure absence of proteolytic (putrefactive) bacteria



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To help relieve neuritic symptoms of pregnancy

MEAD'S BREWERS YEAST

is proving of increasing value as a routine part of the patient's diet in treating such symptoms as nausea, vomiting, dyspnea, pains in legs and arms, muscle weakness and fatigue.

In one series, it was found that the physical, mental and emotional status of 120 pregnant and lactating women receiving Mead's Brewers Yeast and other foods rich in vitamin B was superior to that of a control group of 116 women.

Mead's Brewers Yeast contains the entire vitamin B complex, including thiamine, riboflavin and nicotinic acid. It may be given in tablet form and/or in powder form. The powder may be quickly shaken up with milk in an ordinary cocktail shaker. It also mixes well with tomato juice or ketchup.

Each Mead's Brewers Yeast Tablet contains not less than .06 mg. thiamine (vitamin B_1), .02 mg. riboflavin (vitamin G), and .15 mg. nicotinic acid, together with other factors of the vitamin B complex commonly occurring in nonviable brewers' yeast.

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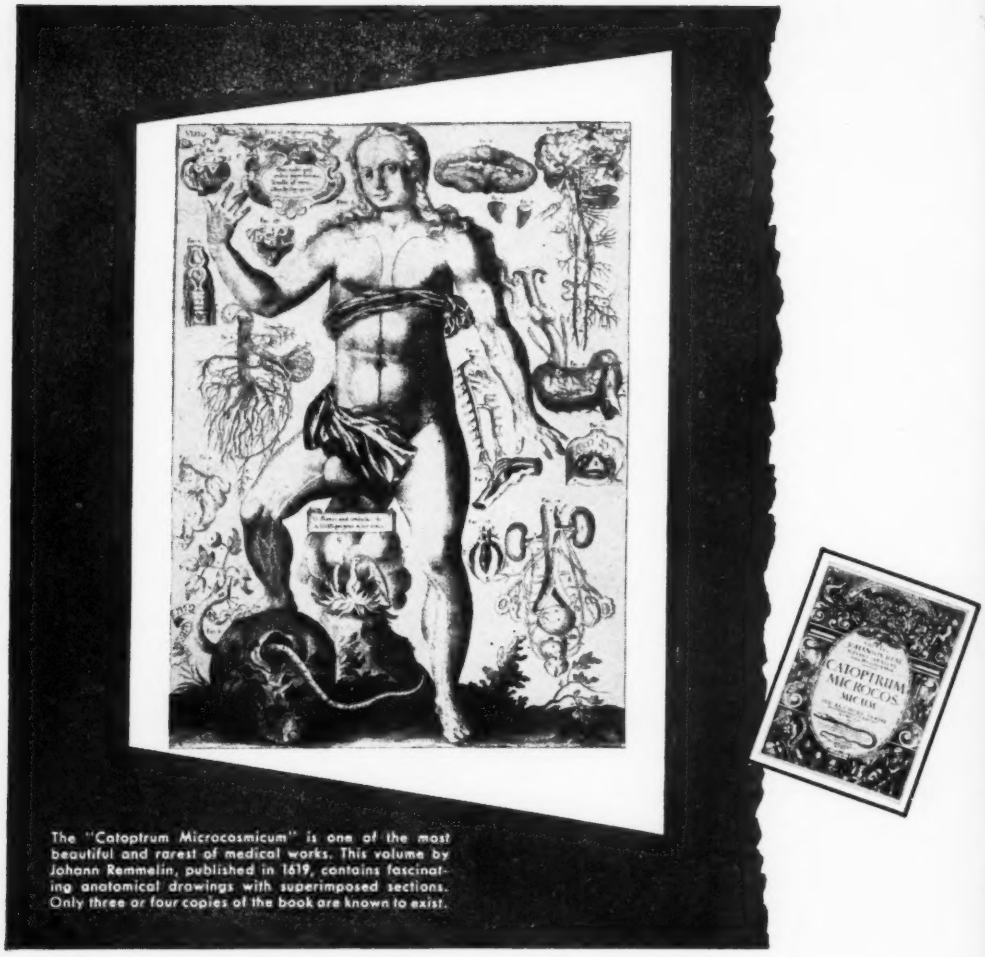

The "Catoptrum Microcosmicum" is one of the most beautiful and rarest of medical works. This volume by Johann Remmelin, published in 1619, contains fascinating anatomical drawings with superimposed sections. Only three or four copies of the book are known to exist.

Ever Since Eve

woman probably has had to contend with the menopause. Only during a little more than a decade, with the availability of effective drugs—as epitomized by Theelin—has corrective medical treatment been possible.

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